Megapixel
1280 x 960
software zoom

30 Frames/s
VGA (640 x 480)
10 fps Mega

-22°F to +140°F
Weatherproof
-30°C to +60°C, IP65
no heating necessary

IEEE 802.3af
PoE
network power
even in winter

microphone & speaker
Audio
bi-directional via IP
variable framerates

Video SIP Client
IP-Telephony
alarm notify,
cam remote control

Video motion
multiple windows
precision pixel-based

lip-syncronized audio
Recording
event-ringbuffer
30 cams each 30 fps

Live viewing
30 cams at 30 fps
all on one screen

Backlight
safe using CMOS
without mechanical iris

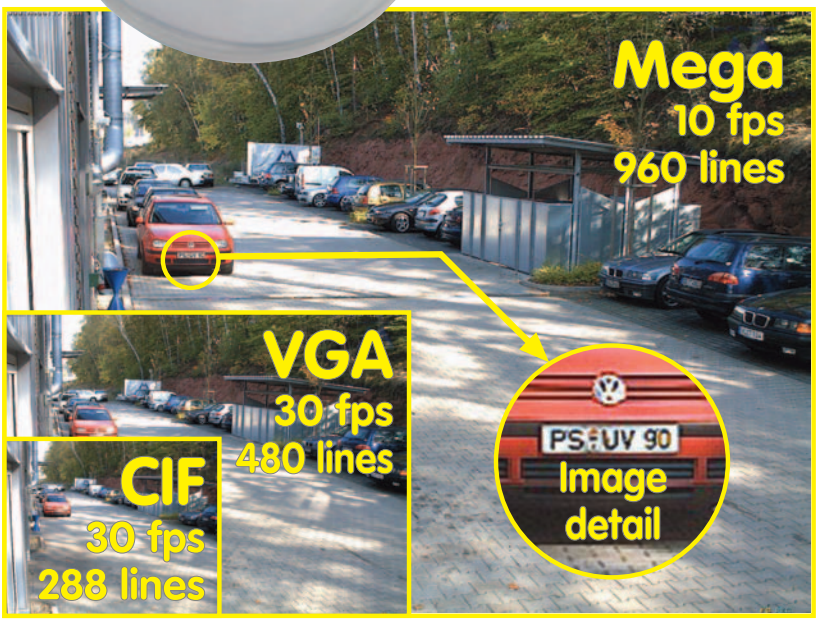
Wall bracket
with cable cover
for RJ45 wall outlet

Robust
no moving parts
fiber glass housing

D12

Camera Manual

Part 1



Complete integration for web and security

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Security-Vision-Systems
MOBOTIX

MOBOTIX ... the new face of IP video

MOBOTIX Camera Data

Enter the data of your camera here!

Camera Model: _____

Camera Name: _____

Factory IP Address: ____ . ____ . ____ . ____

Current IP Address: ____ . ____ . ____ . ____

DHCP: activated ❑ deactivated ❑

Admin User Name: _____

Admin Password: _____

ISDN Dial-In Number: _____

ISDN User Name: _____

ISDN Password: _____

Notes:

Note: MOBOTIX offers inexpensive seminars that include a workshop and practical excercises: **Basic Seminar** 2 days, **Advanced Seminar** 2 days. For more information, see **www.mobotix.com**

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Note

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Notes:

1 INTRODUCTION

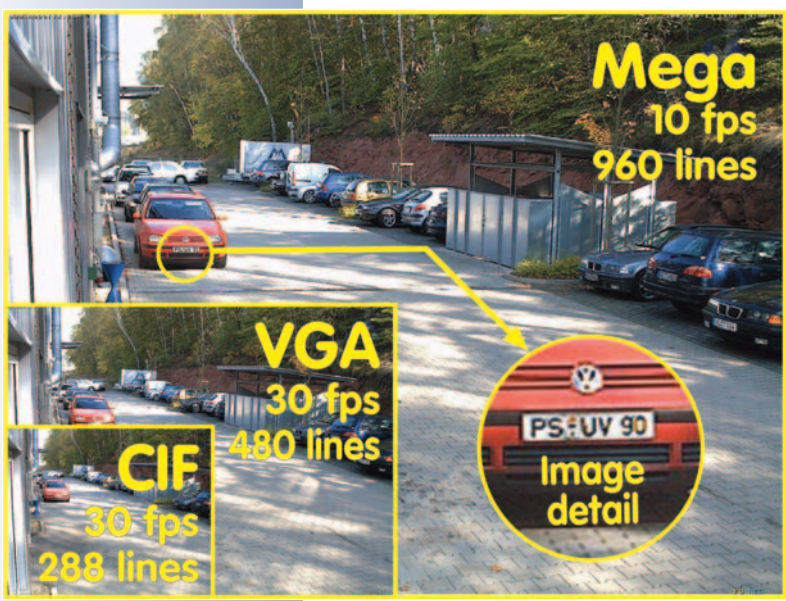
30 frames per second!

The **D12** camera range represents the next model of the second generation of MOBOTIX network cameras. Now more powerful than ever, the new models are capable of creating high-resolution live video streams with high frame rates. When showing **VGA video (640x480)**, the camera can deliver up to **30 fps**. Even **Megapixel video (1280x960)** will still generate up to **10 fps**. The camera transmits realtime sound from the microphone, even in the browser.

Similar to previous MOBOTIX cameras, D12 cameras are available as **SECURE**, **IT**, **WEB** and **BASIC** models with differing software features. The WEB and BASIC models do not have a microphone. The D12 can be fitted with all MOBOTIX M14 high-performance lenses.

Everything integrated!

Like all other MOBOTIX cameras, D12 models are more than "just a camera"; the integrated software features (Secure/IT models) include a multitude of functions, such as **video motion detection**, **long-term recording**, **alarm messaging** and **video IP telephony**. In camparison to camera systems from other manufacturers, buying and installing additional software on the computer is thus unnecessary. Instead of using a web browser, you can also download the free **MxViewer** for Windows from **www.mobotix.com**, which allows displaying multiple cameras on one monitor. Moreover, MxViewer can also process incoming alarms from the camera and allows for comfortably searching and evaluating the alarm video clips (including audio).



Because of the low power consumption of only 3 Watts, the MOBOTIX D12 cameras feature the highest operating temperature range in the market from **-30 to + 60°C (-20 to 140°F)**. Since MOBOTIX cameras neither fog up nor require heating, power can be supplied using standard PoE products. All models come with a wall mount that covers wall outlets and perfectly conceals the cabling.

Using the new **MX Interface Connector** with D Sub 15 HD socket, you can directly connect external lamps, devices, sensors, microphones and audio amplifiers. The **MOBOTIX Cam-IO** expansion box simplifies installing the camera and expands on these possibilities: All external devices, sensors and the Ethernet cabling are connected directly to the installation box. Likewise, the **MOBOTIX Cam-IO** installation box (available from Q1 2007) hooks up to the mains and supplies power to the camera, without requiring any other type of power supply.

1.1 The Concept Behind the MOBOTIX D12

High-Resolution Live Video (640x480) with up to 30 Frames/s

The second generation of cameras from MOBOTIX now delivers smooth live video display in VGA format with synchronous live audio, yet it keeps the network load to a minimum (approx. 2 Mbps). Live video display now match the performance of analog video systems. When recording, MOBOTIX systems easily outperform analog systems, since MOBOTIX cameras store the same resolution and quality with the same frame rates as in the live display. MOBOTIX technology thus allows **simultaneously** recording the video from **30 cameras in continuous recording mode on one standard PC at 30 fps each, including the audio channel** of the cameras.

Low Bandwidth Requirements

MOBOTIX' patent pending **MxPEG** streaming format allows fast live video with audio at extremely low network load (1 to 2 Mbps). Since the MOBOTIX camera itself detects movements in the image, video is only transmitted if movements occur, and when the video and audio data are stored.

Voice over IP and ISDN

Moreover, **MxPEG** provides for synchronized audio and two-way communication between the camera and your computer. Room surveillance with audio is possible using Internet Explorer or MxViewer. Alarm notification on your mobile via Internet (SIP) or ISDN telephony is just as easy as event-controlled voice messages directly from the camera.

IP Telephony and Video SIP

IP Telephony!

All telephone features can be used via Internet telephony thanks to the integrated SIP client. The SIP client allows remote-controlling the camera using the touchtone keys and also places the alarm calls of the camera. Video SIP establishes audio/video connections to the camera using Windows Messenger or similar applications (e.g. Counterpath x-Lite/eyebeam).

Long-Term Storage Included

MOBOTIX cameras have an integrated long-term storage system for Linux, Windows and Mac OS X computers. Every camera manages its own storage space as a ring buffer on the shared folder. Thanks to this decentralized approach, 30 live cameras can store images on a regular Pentium 4-class computer with **30 fps each**, including audio (also depends on the operating system).

Event Storage on SD Card

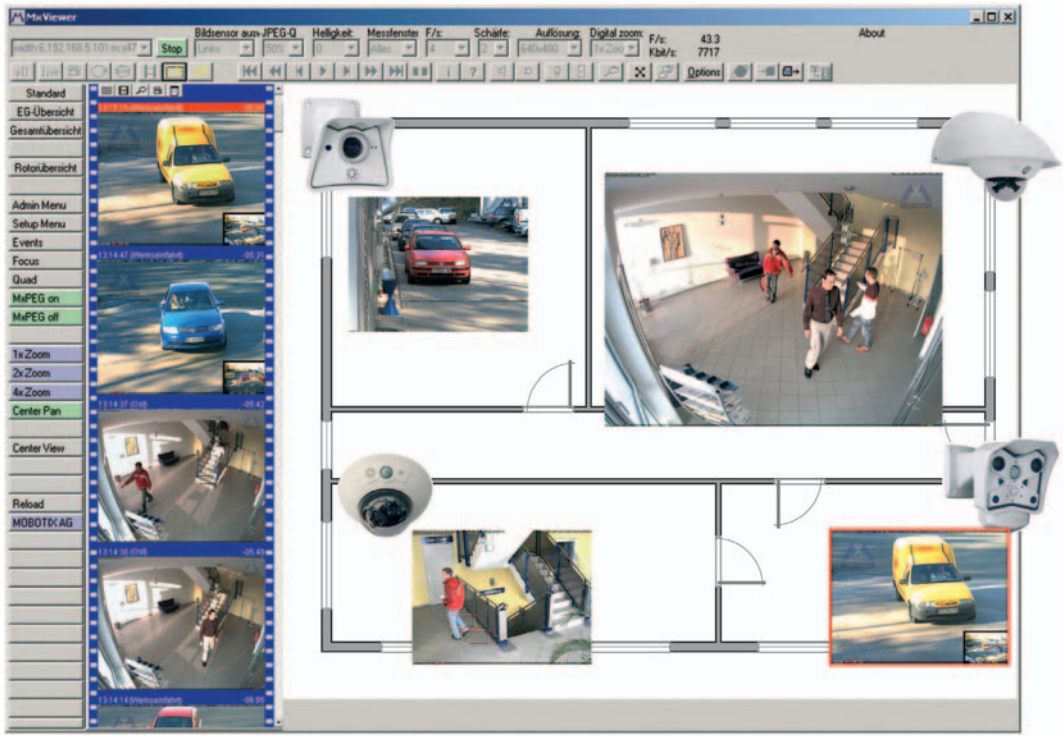
An SD card can be inserted into the integrated slot to increase the internal memory of MOBOTIX D12 cameras (SD cards will be supported after a software update, which will be available at the end of 2006). A 2GB card can permanently store up to 65,000 images in CIF format, 40,000 images in VGA format or 13,000 Megapixel

images, which are not lost in the event of a power failure. If long-term storage on a file server has been set up, the SD card adds yet another layer of security against loss of data, as the SD card can easily bridge longer network outages.

30 Live Cameras Using MxViewer

The free **MxViewer** Windows client for viewing up to 30 MOBOTIX cameras with audio now features an integrated layout editor for quick assembly of building plans-using full drag&drop support for positioning the live camera images. Load a floor plan as background image, drag&drop the cameras; done.

Download MxViewer free of charge from www.mobotix.com



Event and Time-controlled

Just like event-controlled recording upon detecting movements in the image, the camera can also record when the volume picked up by the microphone exceeds a set trigger value. Using scheduled recording, time tasks can start or stop video recording, uploading of images to a web site or sending of emails with video/audio clips. Special programs control vacation times and holidays.

Remote Alert Popup

In case of an alarm, MOBOTIX cameras automatically pop up windows or activate other functions at a remote security control center. The cameras can use network/wireless, GSM/GPRS/UMTS (3G) or Internet connections for this purpose.

Day & Night

MOBOTIX Night models with two image sensors (color and B/W) deliver brilliant color images during the day and crisp B/W images at night. Cameras switch lenses automatically, depending on the illumination.

Integrated Power over Ethernet

Power is supplied via the network cables using either MOBOTIX **Network Power Adapters with power supplies** or the Network Power Racks (4/8/20 cameras per rack) or devices that supply **PoE according to IEEE 802.3af**. Since the camera's plastic housing insulates well and does not fog up, no additional heating or fans are necessary. This is why MOBOTIX cameras have low power requirements (3 Watts) and can be operated every day of the year indoors as well as outdoors and why PoE can be used for supplying power—unlike in other cameras.

No heating required - PoE is no problem even in the wintertime!

Weatherproof

MOBOTIX D12 cameras are certified according to IP65 and are designed for outdoor as well as indoor usage. As the cameras do not have any moving parts, they are extremely robust and resistant against heat or cold (-30°C to +60°C; -20°F to + 140°F).

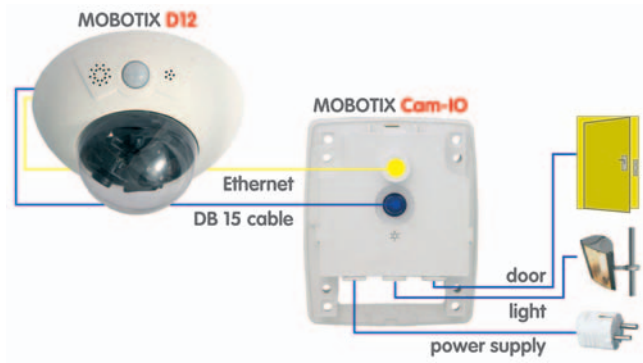
Expanded Connections—MX Interface Connector D Sub 15 HD

Depending on your requirements, you can connect additional sensors via the **D Sub 15 HD** socket, allowing you to expand the range of sensors already in the camera. Likewise, you can use the signal outputs of the camera to switch external devices or to trigger external devices, such as alarm systems. This socket also provides a Line In pin, a Line Out pin, power supply for USB devices, USB master data signals and a pin for connecting a backup power supply, which can also be used by solar panels.

Easy Installation Using the Cam-IO Installation Box

See section 3.7.2 for more detailed information

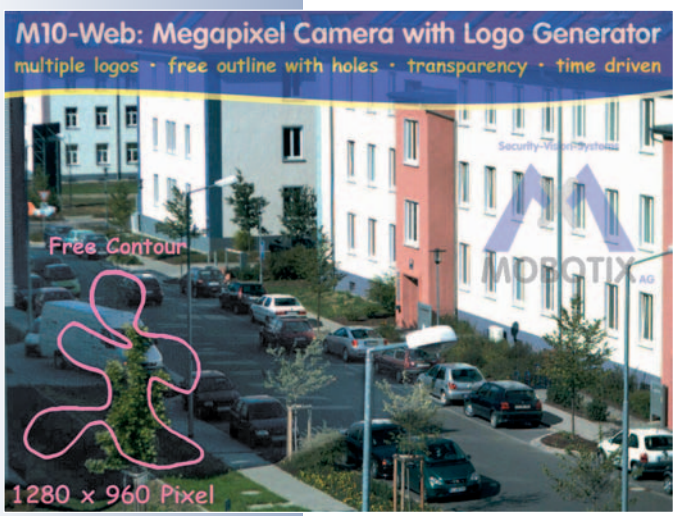
The **Cam-IO Installation box** greatly facilitates setting up a security system as this module carries all pins of the **MX Interface Connector** and simplifies connecting external devices and sensors. Besides supplying power to the camera, the installation box can power lamps with up to 500 W/230 V (max. 4 A) and has heavy-duty connectors for the remaining pins of the **D Sub 15 HD** socket (e.g. Line In/Out or signal inputs of the camera).

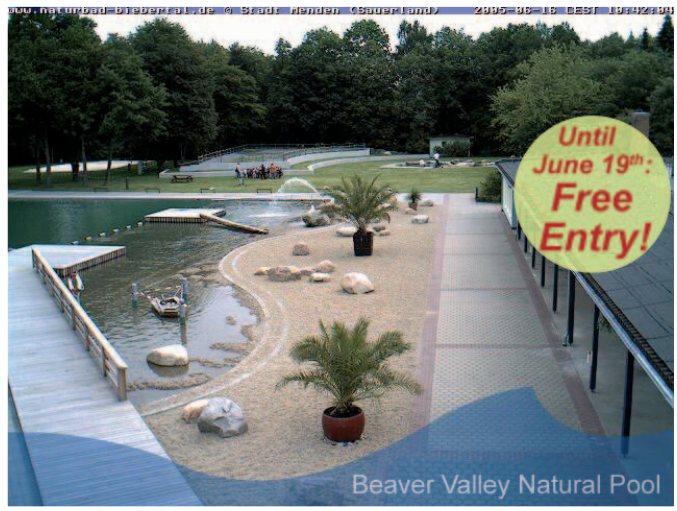


Logos, Animated or Freestyle

Logo generator integrated

The Logo generator of MOBOTIX cameras allows integrating different banners and graphics (including files loaded from any URL) into the current camera images—with optional scheduler control. MOBOTIX cameras are the only network IP cameras supporting animated and transparent graphics.

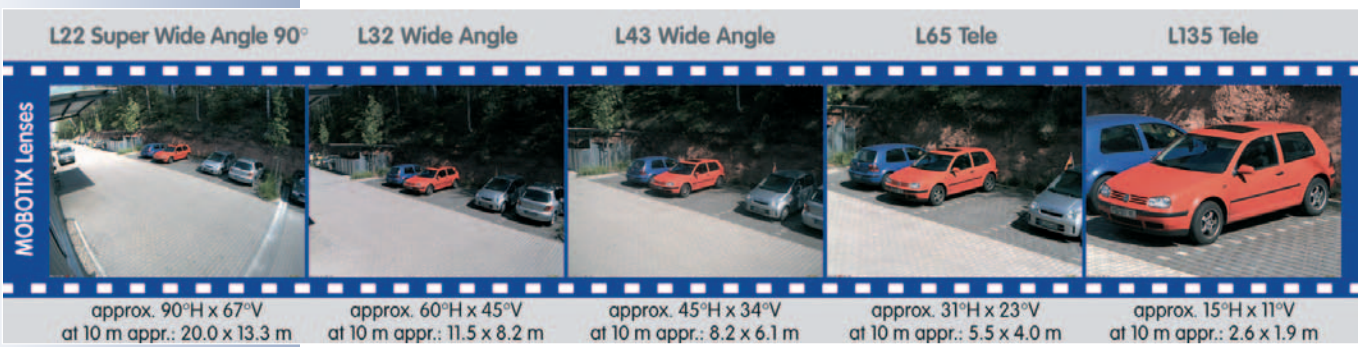

M10-Web: Megapixel Camera with Logo Generator
multiple logos · free outline with holes · transparency · time driven
Free Contour
1280 x 960 Pixel



Notes:

1.2 Product Advantages of the MOBOTIX D12

- MOBOTIX D12 camera models support the Power-over-Ethernet **standard IEEE 802.3af** as well as MOBOTIX PoE technology.
- **Individual lens configuration** possible:


L22 Super Wide Angle 90°
L32 Wide Angle
L43 Wide Angle
L65 Tele
L135 Tele
MOBOTIX Lenses
approx. 90°H x 67°V
at 10 m appr.: 20.0 x 13.3 m
approx. 60°H x 45°V
at 10 m appr.: 11.5 x 8.2 m
approx. 45°H x 34°V
at 10 m appr.: 8.2 x 6.1 m
approx. 31°H x 23°V
at 10 m appr.: 5.5 x 4.0 m
approx. 15°H x 11°V
at 10 m appr.: 2.6 x 1.9 m

- Internal memory can be expanded using non-volatile **SD cards** (available from end 2006 after updating the software).
- Optional **Wireless** or **UMTS/3G** functionality thanks to **CF cards** (only installed by MOBOTIX; available in future versions).
- High image quality with **max. 1.3 M pixels** resolution. The proven MOBOTIX software scaling delivers crisp images even for the smaller formats (PDA, CIF, VGA).
- Fully browser-based—**no software installation** required.
- Simple connection to IP network or **DSL using the integrated 10/100 Ethernet** interface, or **ISDN**.
- Camera configuration and playback of recorded images from any standard browser.
- **Synchronous audio** and **intercom features** when camera calls using integrated IP telephony or ISDN.
- Audio room surveillance using standard browser (Internet Explorer). The camera microphone can be irreversibly deactivated.
- **Minimal network load** thanks to innovative MxPEG compression scheme (patent pending).
- Integrated event-controlled and scheduled recording.
- Live recording of up to **30 cameras simultaneously with full 30 fps each, including audio on one standard PC**.
- No limitation regarding the number of cameras and storage media; the system is infinitely scalable.
- **Long-term storage of video** including audio or individual images in a freely selectable data storage (ring buffer) on a standard PC or file server.

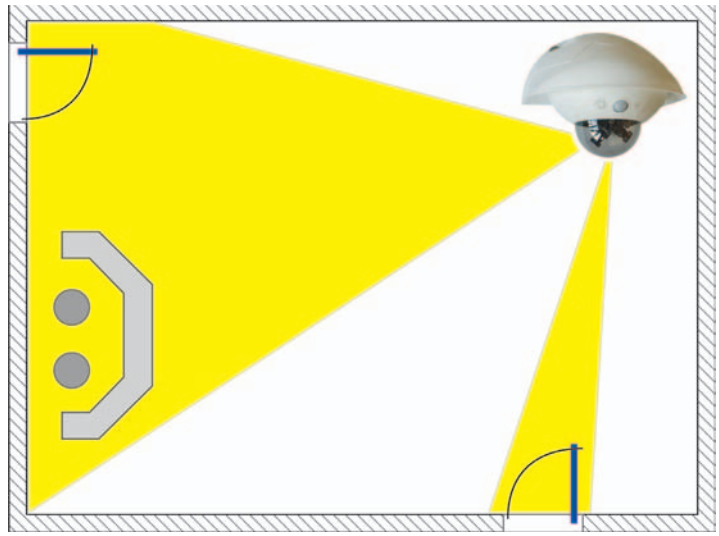
- **Integrated data storage (ring buffer)** can bridge network failures of up to 4,000 images or 6 minutes video; this can be further expanded when using an SD card.
- Maintenance-free and **weatherproof from -30 to +60°C (-22 to 140°F)** because the system has **no moving parts**.
- Alarm notification via e-mail, SMS or phone call.
- **Backlight correction** with predefined and customized exposure areas.
- Professionally equipped with integrated sensors: **Video motion detection**, **microphone and speaker**.
- **D Sub 15 HD socket of the camera** allows connecting three signal inputs (e.g. external sensors), three signal outputs (e.g. alarm systems), Line In, Line Out, USB devices, power backup.
- Can be further expanded using **MOBOTIX Cam-IO**, which allows direct connection to door openers, lamps, sirens, an external microphone (with pre-amplifier), a loudspeaker, external sensors (e.g. light barrier). Hooks up directly to the mains and supplies power to the camera via the network cable to the camera (**PoE**).
- Free **MxViewer** for Windows to display and manage MOBOTIX cameras; includes alarm management, background images, etc.
- **Layout editor** in free-of-charge **MOBOTIX MxViewer** for quickly creating building layout plans with cameras.
- Platform-independent **SDK** allows developing applications; includes sample applications (MxPlayer, MxPEG-to-MJPEG converter) and sample source code.

1.3 The MOBOTIX D12D-Fixdome Outdoor

1.3.1 The Concept of the MOBOTIX D12D-Outdoor

The two image sensors can look into the same or into different directions

As an innovative camera system, the MOBOTIX D12D-FixDome has captured an impressive piece of market share in the network camera market. Thanks to its two image sensors, this camera system delivers video surveillance of one scene in day/night mode (**Night** models) or it can monitor two different areas using different day or night lenses.



The D12D-Outdoor and the wall mount now allow mounting this unique camera system outside for enhanced outdoor surveillance. Besides the many advantages inherent to the MOBOTIX concept, the **outdoor wall mount** offers these additional benefits:

Perfect weather protection for an innovative camera system

When mounted to the outdoor wall mount, the MOBOTIX D12D reaches protection class **IP65** (absolutely dustproof, resistant against water jets). Operating temperatures may vary between -30°C and +60°C (-22°F to 140°F), making it the ideal camera for the most demanding weather situations. From stations in Antarctica to production monitoring at a steel smelting plant - the MOBOTIX D12D offers unmatched flexibility and versatility.

Simply mounted outdoors

Elegantly covers wall outlets

Since the wall mount and the wall sealing have been designed to fit over outdoor wall outlets, providing the network connection can be separated from actually mounting the camera. After the position of the wall mount has been determined, the installer of the MOBOTIX camera system can connect the camera system to an **installed network outlet**, which has been properly tested and configured by the network installer.

Robust design makes for a long life

The outdoor wall mount is made from **PBT-30GF** (Polybutyleneterephtalate with 30% fiberglass). This material is used heavily in the automotive industry and is sturdy, resistant against high temperatures, environmental influences, chemicals, etc. Combined with the purely software-based design of the MOBOTIX D12D and the free software updates, the whole surveillance system has a long product life and thus provides a high return on investment (ROI).

Extreme environmental conditions (sand storms, high levels of salt in the air, heavy rain, etc.) may lead to higher abrasion than usual; the wall mount should thus be checked on a regular basis. When planning an application under extreme environmental conditions, you should consider the MOBOTIX M10 camera models as they are more robust due to their factory-preset and locked lenses, absence of moving parts and the lower weight. This applies especially to locations that are subjected to vibrations (e.g. when mounted to a ski-lift) and other environmental conditions, (e.g. sand storms, near coast lines, etc.).

MOBOTIX D12 models are better suited for extreme conditions:

- No moving parts
- Locked-in-place lenses
- Lower weight

Easy to clean

Cleaning the D12D-Outdoor is simple enough - wipe the dome using a lint-free cotton cloth and a mild household detergent without abrasive particles.

Open for enhancements

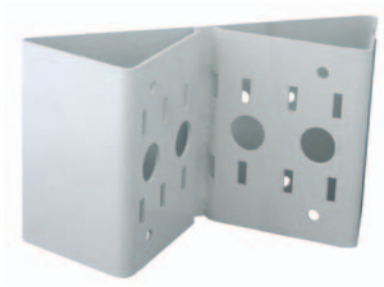
The outdoor wall mount's design provides for easy integration of WiFi (WLAN) or GSM/GPRS modules within the casing without disturbing the overall appearance of the surveillance unit. Likewise, relays for alarm sirens or lights can be installed easily and elegantly within the outdoor wall mount.

More mounting options using the MOBOTIX corner and mast mount

MOBOTIX offers an additional mount that allows securely attaching the outdoor wall mount to 90-degree corners of buildings and to masts. Thanks to the unmatched flexibility when positioning the MOBOTIX D12D-Outdoor's image sensors, large outdoor areas can be monitored using only a few cameras.

Outdoor Corner and Pole Mount

Outdoor Wall Mount with Corner and Pole Mount



Corner and Pole Mount (rear view)

Robust network video system for indoor and outdoor applications

1.3.2 Product Advantages of the MOBOTIX D12D-Outdoor

Besides the many product advantages inherent to the MOBOTIX D12, the MOBOTIX D12D-Outdoor offers these additional benefits:

- **Attractive design** blends in well with building facades.
- **Perfect weather protection** for the MOBOTIX D12D: **IP65**, -30 to +60°C (-22 to 140°F)
- **Easily mounted** and perfect cover for outdoor wall outlets.
- **Weatherproof** and **easy to clean** thanks to casing built from **PBT-30GF**.
- Ample room for **extension modules** (WiFi, GSM/GPRS) stored within the casing of the outdoor wall mount.
- High **return on investment (ROI)** thanks to the software-based MOBOTIX design and **free updates**.
- Mounting to building corners and masts easily accomplished using the **Corner and Pole Mount**.
- Unique **flexibility** when setting the direction of the image sensors provides for thorough video surveillance while requiring relatively few cameras.

1.4 Feature List

The MOBOTIX camera includes the following main features (some features are model-dependent):

1280 x 960 pixels

- **Live images** of up to 1280 x 960 pixels resolution via network, ISDN, GSM, GPRS, UMTS, wireless up to 30 fps (at 640 x 480 resolution), also adapted for **PDAs**.
- **Digital zoom** with three stages (1x, 2x, 4x) and integrated panning (from 2x: clicking in the browser image will move the visible image section in that direction).
- **True software scaling** using the proven and continuously improved MOBOTIX algorithms which delivers brilliant images even with smaller image formats (e.g. 320 x 240).
- **Audio video recording** with three different recording modes: Event recording with audio, continuous recording with variable frame rate and audio as well as event-controlled Snap Shot recording of JPEG images.
- **Telephony functions (SIP and ISDN)** for Phone Call-In and remote-controlling from touchtone phones as well as voice phone calls from the camera for alarm messaging purposes.
- **SIP Video** (Internet telephony) with support for e.g. Windows Messenger, x–lite/eyebeam and video phones.
- **File server tests** can monitor a file server and use one or more of the defined messaging options for error notification.
- **Camera tests** where several cameras monitor each other, with failure notification using the defined messaging options.
- **Playback** of recorded images/video sequences with audio in the integrated video management system.
- **MultiView** screen for displaying multiple cameras or events in one browser window.
- **Event notification** by e-mail, SMS (using a provider), voice notification by phone using pre-recorded messages, sounds and by visual alarms (e.g. red frame in Live image) using two separate messaging paths.
- **Object tracing** for analyzing the paths of objects that are moving in the image.

Logo generator

- **Logo generator** for displaying logos in the camera images with dialogs for managing image files, image and logo profiles for controlling logo display.
- **Logos** can have **transparent areas** and can be displayed partially transparent at the same time (creating a watermark effect), banner rotation and animations are also possible.

- **Time Tables** for handling customized days, e.g. for holidays and vacations. The time tables are used to control the camera's arming, image recording, action, messaging, logo, obscure image and other features.
- **Remote signaling** for **master/slave** cameras, with the master camera controlling the arming status of the slave cameras. This allows arming all slave cameras using a key switch that is connected to the master camera.
- **Transfer profiles** for improved handling of FTP, E-Mail, phone calls, network transmissions and messages.
- Multiple possibilities for connecting external devices, sensors and signal lines using the **D Sub 15 HD socket** of the camera or the **MOBOTIX Cam-IO** installation box.
- **Speaker phone** with talk, listen and intercom modes via **Internet telephony (SIP) and ISDN** using the integrated microphone and speaker.

Telephony features using ISDN or SIP connections (Internet telephony)!

- **Phone Call-In** to remotely control the camera using a touchtone phone via **Internet telephony (SIP) and ISDN** (retrieve camera information, establish Internet connection, announcement of retrieved IP address, intercom feature, etc.).
- **MxPEG video compression** using **MOBOTIX MxViewer**. The ActiveX plug-in for Internet Explorer users brings all advantages of MxPEG (including the audio stream from and to the camera) to the browser-based user interface.
- **Routing** allows using other network connections besides the standard route.
- **DynDNS client** for accessing the camera using a symbolic name (e.g. `mymobotixcam.dyndns.org`) although the provider is assigning a new IP address every time the camera connects to the Internet.
- Inerasable **backup operating system** that is used to restart the camera in the event that a software update has failed, allowing you to restart the update process.
- **Enhanced startup options** for the camera (obtain IP address via **DHCP**, announcement of IP address and other network data, reset to factory default settings).

Free software updates on www.mobotix.com

Software Updates

MOBOTIX provides **free** software updates on **`www.mobotix.com`** at regular intervals that improve and expand the camera's functionality. Chapter 6, *Software Update*, in the *Software Manual*, provides more information on the process.

1.5 Hard- and Software Differences of the MOBOTIX D10/D12

To cut a long story short – nothing changes with the basic functionality or the looks of the camera. Users, who have worked with D10 models before will not have any problems adjusting to a MOBOTIX D12.

Changing to the three times faster **Intel "Bullverde" PXA270 processor with 520 MHz frequency** has boosted image processing considerably, providing notably higher frame rates (**up to 30 fps in VGA, up to 10 fps in MEGA resolution**). The new hardware also brings new features, such as SIP video (Internet telephony with video) and new possibilities for extending the hardware (SD card, CF slots, MX Interface Connector, USB master pins for MOBOTIX expansion modules, etc.).

The following table shows the most important differences in the **hardware and software**:

	MOBOTIX D10	MOBOTIX D12
Hardware Differences		
Serial interface	D Sub 9	**D Sub 15 HD**
Ethernet interface	10 Mbps	**10/100 Mbps**
USB connector	--	**USB master** on D Sub 15 HD (for MX expansion modules)
SD card*	--	**SD card** for extra storage
CF slots**	--	**CF slots** for MOBOTIX expansion modules (wireless, storage, ...)
Line In/Out pins for external audio devices	--	**External microphones/PA systems** via D Sub 15 HD
Backup power supply	--	**Backup power** (6 to 12 V, max. 1 A) on D Sub 15 HD
ISDN power supply	Power supply via ISDN NT	**Not** possible, but can be injected into 8-wire cable (**split cable and power supply or PoE required**)
PoE power supply	MOBOTIX PoE products (MX-NPA + power supply / NPR-4/8/20)	MOBOTIX PoE products **and standard PoE IEEE 802.3af**
Software Differences		
Frame rate (fps)	25 CIF • 12 VGA • 4 MEGA	**30 CIF • 30 VGA • 10 MEGA**
Image formats	CIF, VGA, VGA2, MEGA, Custom	CIF, VGA, VGA2, MEGA, **Panorama**, Custom
SIP video	--	SIP video

* Available end of 2006

** Supported in future versions. CF cards are only installed at the factory!

The only limitation versus the M10 is the power supply via ISDN cable, which is not possible any more. This can only be achieved using the MOBOTIX PoE products and the ISDN split cable

1.6 Important Notes

1.6.1 Password for the Administration Menu

Administration menu:
User: admin
Password: meinsm

The administration area of the camera (**Admin Menu** button) is protected by a user name and password:

- User name is **admin**
- Password is **meinsm**

Enter the user name and password exactly as shown above. Note that both entries are case-sensitive. When accessing the administration menu for the first time, the **Quick Installation** wizard will help you set the most important parameters that are relevant for your requirements. **For security reasons, it is highly recommended to change the administrator password after the camera has been configured properly.**

CAUTION: Make sure that you store information on user names and passwords in a secure place. In case you loose the administrator password and cannot access the Admin menu, the password can only be reset at the factory. This service is not free!

1.6.2 Password for ISDN Dial-In

ISDN Dial-in
User: linux
Password: tux

Dialing into the camera via ISDN is protected by a separate password. When setting up a dial-in connection from a computer, you need to provide this information:

- User name is **linux**
- Password is **tux**

Enter the user name and password exactly as shown above. Note that both entries are case-sensitive.

1.6.3 Permanently Deactivating the Microphone

The microphone can be irreversibly deactivated!

Deactivating a camera's microphone may become necessary in order to protect the privacy of people at a workplace or for other reasons. You can permanently and **irreversibly** deactivate the microphone in the **Admin Menu > Loudspeaker and Microphone** dialog.

CAUTION: This deactivation is permanent and cannot be reversed even by MOBOTIX engineers. Deactivating the microphone will also deactivate all features that use the camera's microphone.

1.6.4 Starting the Camera Using the Factory IP Address

If the camera's IP address is not known any more, you can start the camera with its factory IP address. Section 3.6, *Starting the Camera Using the Factory IP Address*, describes this procedure in more detail.

1.6.5 Resetting the Camera to Factory Defaults

All settings of the MOBOTIX camera can be reset permanently to the factory default settings. This makes sense if you have, for example, obtained a camera without any information or you would like to reset all settings after testing the camera. In order to perform this procedure, you need to have access to the administration area of the camera (**admins** group). Open **Admin Menu > Reset ...** to reset the camera to factory defaults.

The configuration can also be reset partially

Note: In contrast to the method described in section 1.5.4, *Starting the Camera Using the Factory IP Address*, all users (except the **admin** user) will be deleted when resetting the camera to factory defaults. Likewise, the admin user's password will be reset.

1.6.6 Activating Event Control for Security Applications

In its default state, the camera's event control and video motion detection features are **not enabled**. In order to activate event control as a whole, open **Setup Menu > General Event Settings** and activate the **Arming** switch or click on the **Arm & Record** softbutton of the browser interface. The video motion detection window is visible again (dotted frame in the center of the live image) and the camera stores images as soon as the video motion window detects movements.

If the dotted rectangle in the live image is visible, the camera is armed

1.6.7 Deactivating Text and Logo Options

As the camera arming has been deactivated as per factory default (see preceding section), the MOBOTIX camera only displays the text **WWW.MOBOTIX.COM**, the time stamp and the MOBOTIX logo at the top of the image. Once the camera arming has been activated, the texts at the bottom of the live image (event, action and messaging symbols) will also appear.

Text and logos can be also deactivated or customized to your liking

If the camera is armed, you can deactivate the status text at the bottom and the text at the top left corner of the live image by setting **Text Display** in the **Setup Menu > Text & Display Settings** dialog to *Off*. Setting **Text Display** to *Date & Time* will only display the time stamp in the live image. In order to hide the logo in the live image, open **Admin Menu > Logo Profiles** and set **Logo Display** to *Disable*.

Deactivating the camera reboot

1.6.8 Deactivating the Daily Reboot of the Camera

In its factory state, the MOBOTIX camera will automatically reboot every morning at 3:36 am. In very rare cases, external influences (e.g. radiation in high locations) can lead to camera malfunctions. The automatic reboot will refresh the camera's memory and will ensure proper operation without requiring any interaction on the part of the user.

Open **Admin Menu > Time Tasks** and deactivate or delete the *Reboot camera* task. This will prevent the camera from rebooting automatically.

1.6.9 ISDN Compatibility Note

This product is compatible with **Euro ISDN standard TBR3/TBR 3A1**.

Note: MOBOTIX offers special models for the Japanese market that support the Japanese ISDN standard. For additional information on this topic, see the Japanese section at **`www.mobotix.com`**.

1.6.10 Browser Hints

Current browsers with activated **JavaScript** (Internet Explorer, Netscape, Mozilla, Firefox, Safari, Konqueror, Opera, ...) can show the camera's live images with their standard settings. Text-based browsers (e.g. `lynx`) cannot display the user interface and are *not* suitable for operating the camera.

Section 4.9, *Browser Settings*, contains more information on browser compatibility. Chapter 12, *Troubleshooting*, contains more information on how to track and remove errors when operating the camera.

1.6.11 Safety Notes for Operating MOBOTIX Cameras

Electrical surges can be induced by other electrical appliances, improper wiring, but also from the outside (e.g. lightning strikes in phone or power lines).

MOBOTIX cameras are protected against small **electrical surges** by numerous measures. These measures, however, cannot prevent the camera from being damaged when stronger electrical surges occur.

Special care should be taken when installing the camera **outside of buildings** for **protection against lightning**, since this also protects the building and the whole network infrastructure.

MOBOTIX recommends having MOBOTIX cameras installed only by specialists accustomed to installing network devices and having proper respect for the pertinent regulations regarding lightning protection and **fire prevention** as well as the current technology for preventing damages from electrical surges.

Section 2.10, *Wiring, Fire Prevention, Lightning and Surge Protection*, contains more information on these topics.

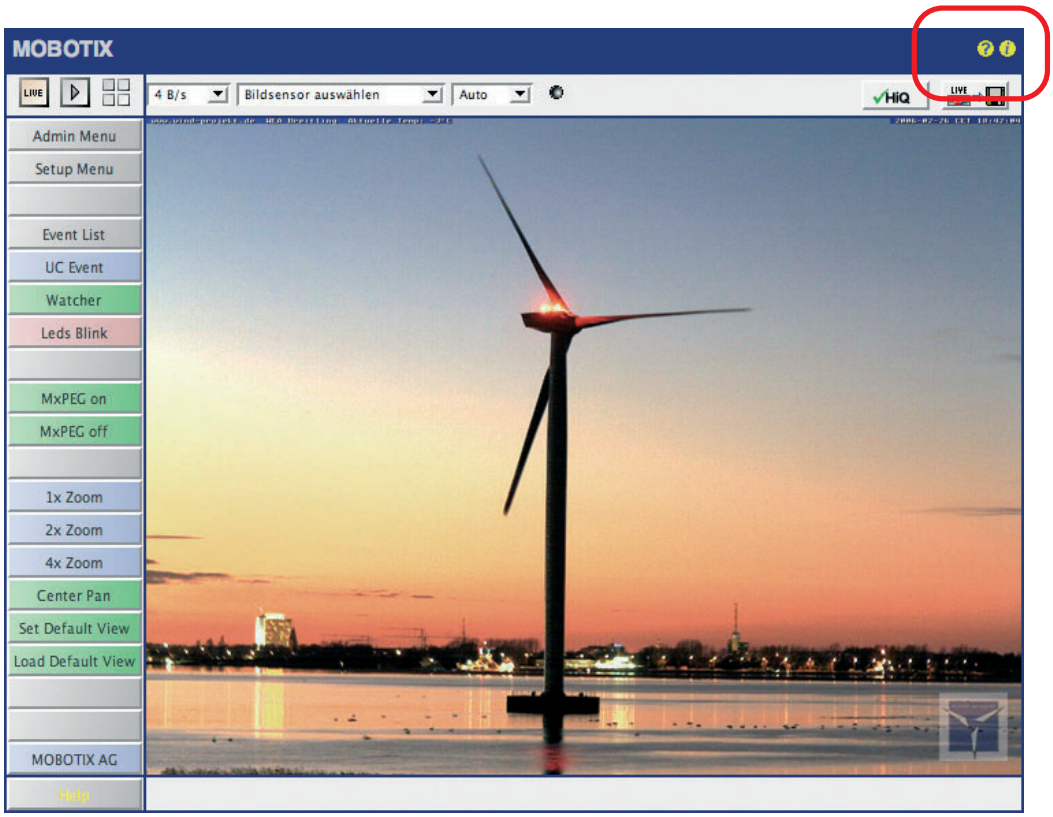
1.6.12 Additional Information

For more information on this topic, see the **News** and **Functional Overview** pages in the online help of the camera's browser interface. Click on the yellow icon in the top right corner to open the camera's online help.

Camera Help

In order to get more information on the camera and its current configuration, open the Camera Status dialog by clicking on the yellow icon in the top right corner of the camera's browser interface.

Camera Status



Another source of information on all dialogs and parameters of the MOBOTIX camera is the **Reference Manual** that you can download from **www.mobotix.com**. The Reference Manual consists of the MOBOTIX camera's online help in one PDF file.

2 INSTALLING THE CAMERA AND THE OUTDOOR WALL MOUNT

2.1 Quick Start

To install the MOBOTIX D12D and the Outdoor wall mount follow **these steps**:

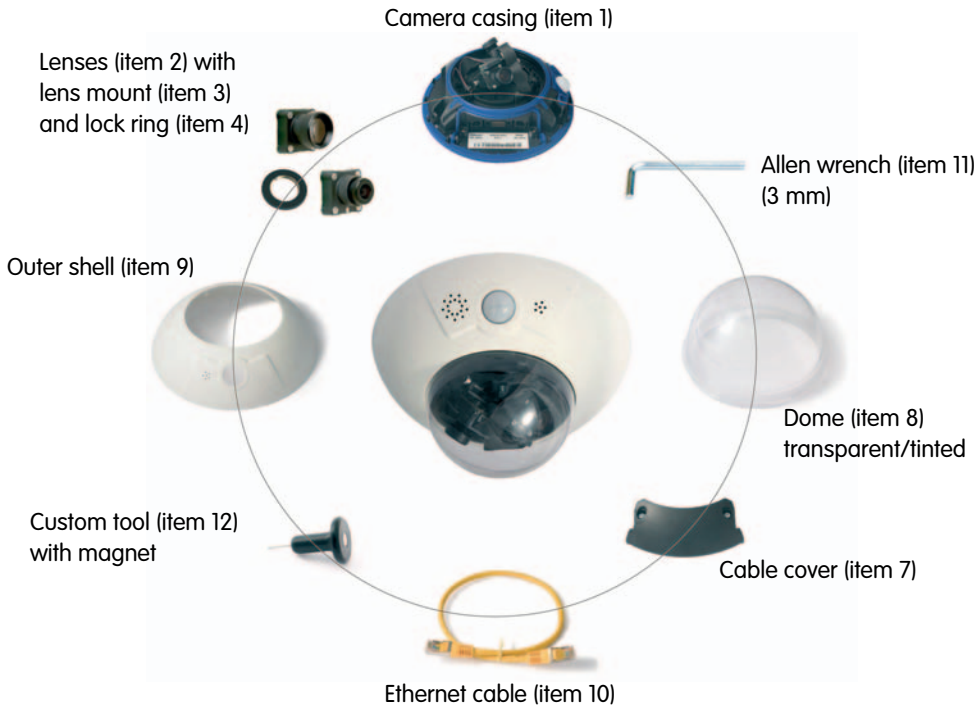
- **Checking the Delivered Parts** (sections 2.2.1 and 2.2.3)
- **Planning the Installation** (section 2.3)
- **Installing the Camera** (section 2.4)
- **Installing the camera on a ceiling or wall** (section 2.5)
- **Installing the camera and the Outdoor wall mount** (section 2.6)
- **Finishing the Installation** (section 2.7)

2.2 Delivered Parts, Camera Components and Dimensions

2.2.1 Delivered Parts and Camera Components of the MOBOTIX D12D

After mounting the outer shell, the D12 is ready for use

The dome should only be touched with a soft cotton cloth for mounting/dismounting


Camera casing (item 1)
Lenses (item 2) with lens mount (item 3) and lock ring (item 4)
Allen wrench (item 11) (3 mm)
Outer shell (item 9)
Dome (item 8) transparent/tinted
Custom tool (item 12) with magnet
Cable cover (item 7)
Ethernet cable (item 10)

Item	Count	Part Name
1	1	Camera casing
2	2	Lens
3	2	Lens mount
4	2	Lock ring
5	2	Ribbon cable
6	8	Cable clamp
7	1	Cable cover
8	2	Tinted/transparent domes
9	1	Outer shell
10	1	Ethernet cable
11	1	Allen wrench (3 mm)
12	1	Custom tool with magnet

2.2.2 Camera Casing and Connectors of the MOBOTIX D12D

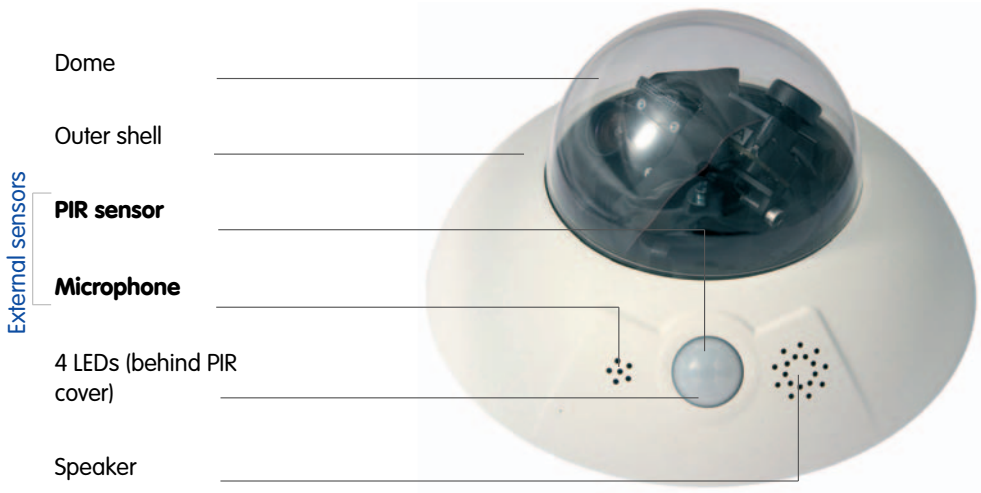
The MOBOTIX D12D-FixDome consists of three main components (**camera casing (item 1)**, **body shell (item 9)** and **dome (item 8)**). Like the M10 models, the MOBOTIX D12 is also delivered with PIR sensor, microphone and speaker.

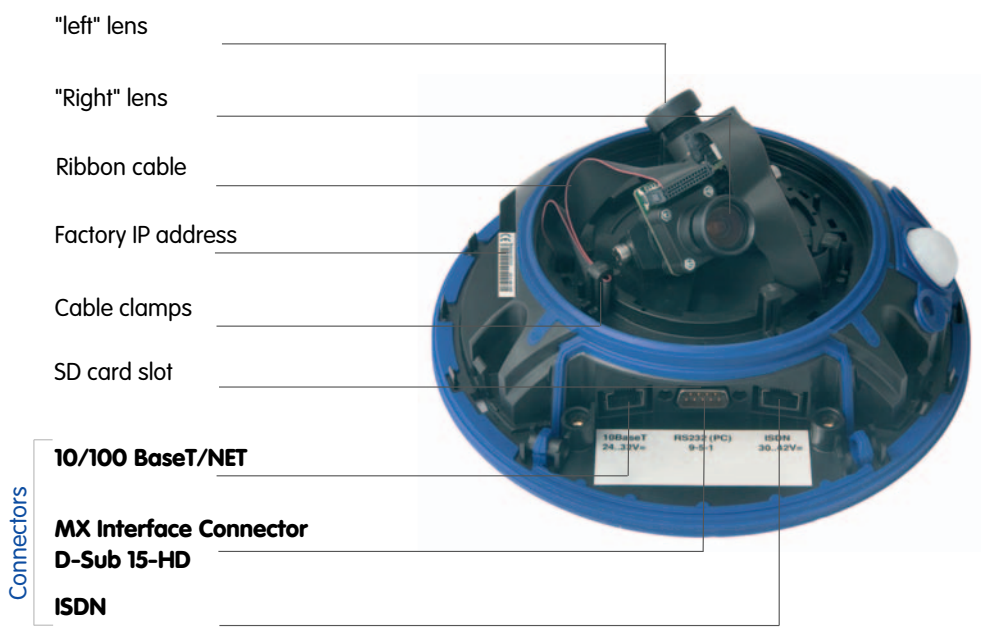
External Sensors

- PIR sensor
- Microphone

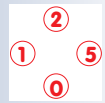
Connectors

- 10BaseT (Ethernet network)
- In/Out / RS232
- ISDN





Signals of the camera LEDs:



0 Power

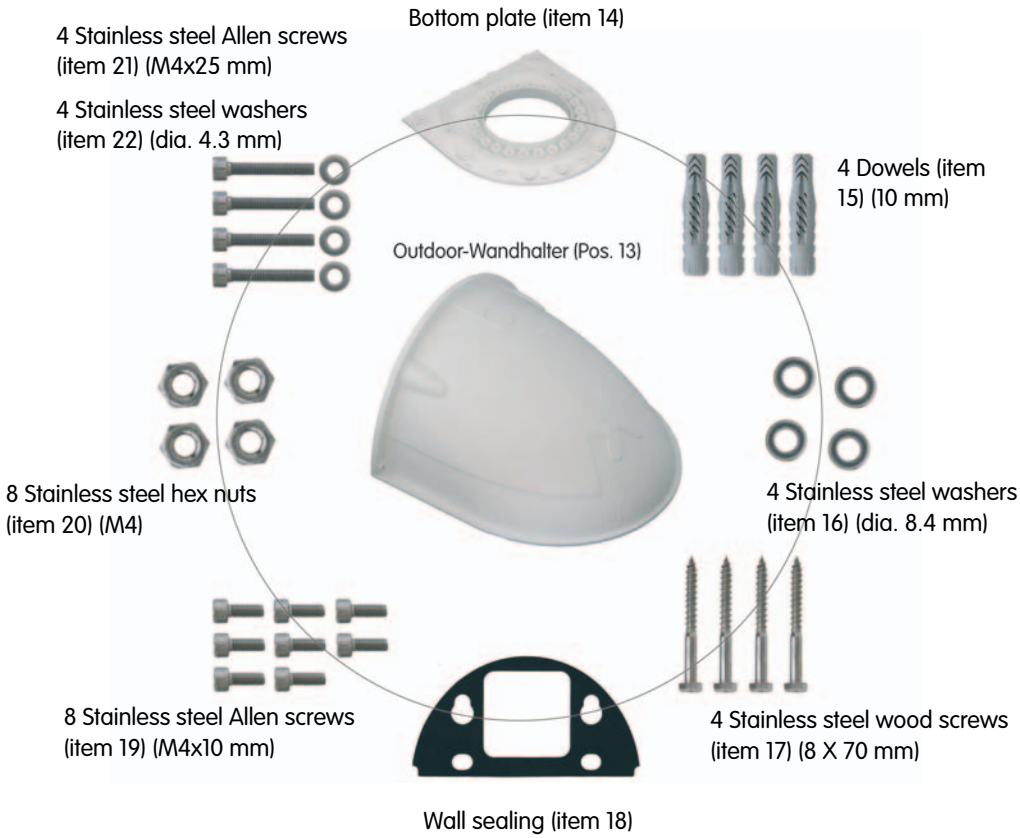
1 Image processing/Event

2 Ethernet

5 Image processing/Event

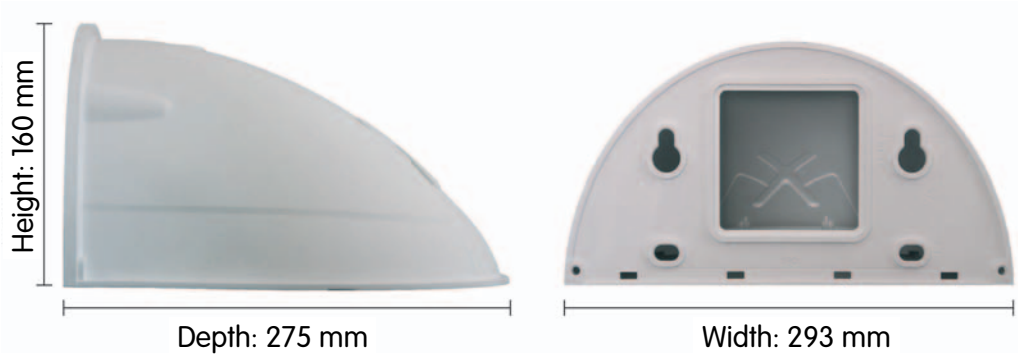
2.2.3 Delivered Parts and Components of the Outdoor Wall Mount

Make sure to check the delivered parts


Bottom plate (item 14)
4 Stainless steel Allen screws (item 21) (M4x25 mm)
4 Stainless steel washers (item 22) (dia. 4.3 mm)
4 Dowels (item 15) (10 mm)
Outdoor-Wandhalter (Pos. 13)
8 Stainless steel hex nuts (item 20) (M4)
4 Stainless steel washers (item 16) (dia. 8.4 mm)
8 Stainless steel Allen screws (item 19) (M4x10 mm)
4 Stainless steel wood screws (item 17) (8 X 70 mm)
Wall sealing (item 18)

Item	Count	Part Name
13	1	Outdoor wall mount
14	1	Bottom plate
15	4	Dowels 10 mm
16	4	Stainless steel washers dia. 8.4 mm
17	4	Stainless steel wood screws with hex head 8x70 mm
18	1	Wall sealing
19	8	Stainless steel Allen screws M4x10 mm
20	4	Stainless steel hex nuts M4
21	4	Stainless steel Allen screws M4x25 mm
22	4	Stainless steel washers dia. 4.3 mm

2.2.4 Dimensions of the Outdoor Wall Mount



The **rectangular hole** in the rear covers the wall outlet

2.3 Optional Accessories

Power supply (MX-SNT-E/U/GB/J/AUS01-30-RJ)

Not required if network components are used that support the PoE (Power over Ethernet) standard IEEE 802.3af!

The MOBOTIX power supply is required if you do not use a **Network Power Box** or **Network Power Rack** (see below), or a PoE-compatible switch or router.

Network Power Adapter (MX-NPA-3-RJ)

Power supply for smaller systems

The Network Power Adapter allows injecting the power supply for the MOBOTIX camera into the network cable. It thus allows using a single cable for connecting to the camera and for remotely supplying power (up to 100 m/300 ft). The Network Power Adapter is required, if you are using the universal power supply and the SecureFlex mount, and power is not supplied using a PoE switch/router or a MOBOTIX Network Power Box/Rack.

Network Power Box for up to 4 Cameras (MX-NPR-4)

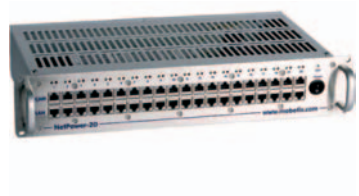
Intelligent and robust power supply thanks to DIN rail installation

The MX-NPR-4 allows supplying power to up to four MOBOTIX cameras via the network cable. The NPR-4 thus replaces four separate power supplies and four Network Power Adapters. The Network Power Box delivery includes a (detachable) clip at the back, which simply clicks onto DIN rails.

Network Power Rack for 8/20 Cameras (MX-NPR-8/20)

Zero maintenance and reliable as these devices do not require fans

The MX-NPR-8/MX-NPR-20 allow supplying power to up to 8/20 MOBOTIX cameras, respectively, via the network cable. These NPRs thus replace 8/20 separate power supplies and the same number of Network Power Adapters; they are easily mounted in 19" racks (2 rack units).

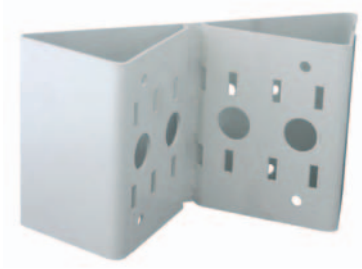


Advantages of the MOBOTIX PoE Products

- Zero maintenance and reliable as the systems do not require fans.
- Higher reliability of the system as a whole, since standard switches without PoE can be used (lower risk of failure).
- Easy installation on DIN rails (*MX-NPR-4*) or in 19" racks (*MX-NPR-8/20*).

Corner and Mast Mount (MX-MH-Dome-ESWS)

If you are intending to mount the camera to the corner of a building or a mast, you should consider using the MOBOTIX Corner and Mast Mounting bracket. This mount is made from **3 mm stainless steel (white, powder-coated)** and has been designed specifically for outdoor use. The supplied stainless steel straps allow attaching the bracket to masts with diameters from 60 to 180 mm (2.4" to 7.1").



SecureFlex Pole Mount: Outdoor quality made of 3 mm stainless steel

MOBOTIX Cam-IO (MX-CAM-IO)

This installation module for MOBOTIX cameras features numerous connectors for external devices. It thus expands the scope of camera applications when adding external sensors using its two signal inputs. On the other hand, it also allows controlling other devices (two signal outputs, Line In/Out for audio signals) and serves as power supply of the camera.

For additional information on the MOBOTIX Cam-IO, see section 3.7.2, *MOBOTIX Cam-IO: Expansion Module for Easy Installation*.

The MOBOTIX Cam-IO will be available from Q1 2007.

Expansion box with various possibilities for attaching external devices and sensors

Split cable for ISDN-only power supply

If only ISDN is available for the camera and only one cable should be used for connecting the camera, you will need to inject power into the 8-wire cable using either a **power supply** and the **Network Power Adapter** or an **MX-NPR-4/8/20**.

Power injection into **one** cable when using only ISDN

2.4 Planning Where to Install the Camera

Before installing the MOBOTIX D12D and the Outdoor wall mount (item 13), the following questions should be solved:

- Where should the camera be installed and which area should the **PIR sensor** cover?
- **Which connections** should the camera use (network/ISDN/RS232)?
- How will you connect the camera **power supply** (Power-over-Ethernet using the Network Power Adapter/Power Rack, external power supply, ISDN S0 bus)?
- How will the connections be provided **from within the building** (network, ISDN, RS232, power supply)?
- Which other **installation options** are available?

Note

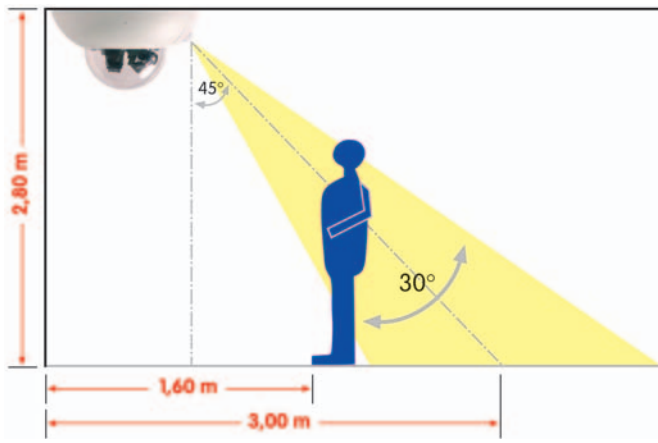
In order to solve these and other questions, you should consult **shop.mobotix.com** for more information on the **MOBOTIX D12D** and the **MOBOTIX D12D-Outdoor** as well as the available accessories.

2.4.1 Mounting on a Ceiling

Caution: The screws should be at least 15 mm longer than the dowels

When mounting the camera to the ceiling, make sure that the PIR sensor points in the direction where it is most useful. The PIR sensor has a range of about 10 meters and a field of view of ± 15°. **The wall outlet should be positioned so that it is directly below the center of the camera casing**.

Use the supplied drilling template (*at the back of the manual*) to properly position the holes for the camera fixtures.



Caution (for mounting on ceilings or walls):

Depending on the direction of the lenses, the live image may stand on its head.

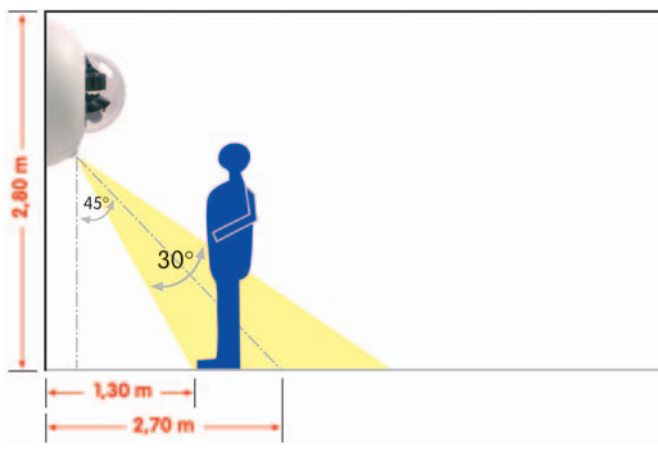
The camera software provides for image rotation/mirroring of the live image for each image sensor. Note that this feature reduces the frame rates!

Setup Menu > General Image Settings, More

2.4.2 Fixing to a Wall

When mounting the camera to a wall, make sure that the PIR sensor points into the direction where it is most useful; usually, it should point downwards. **The wall outlet should be positioned so that it is directly below the center of the camera casing**.

Use the supplied drilling template (*at the back of the manual*) to properly position the holes for the camera fixtures.



Note

The following is recommended for all D12 Outdoor models used outdoors or indoors with high variations in temperature: cut the outer sealing with a sharp knife (as shown in the figure) in order to prevent condensation from accumulating.

The notch should be 3 mm wide (as wide as the Allen wrench) and should point downwards when the camera is installed.

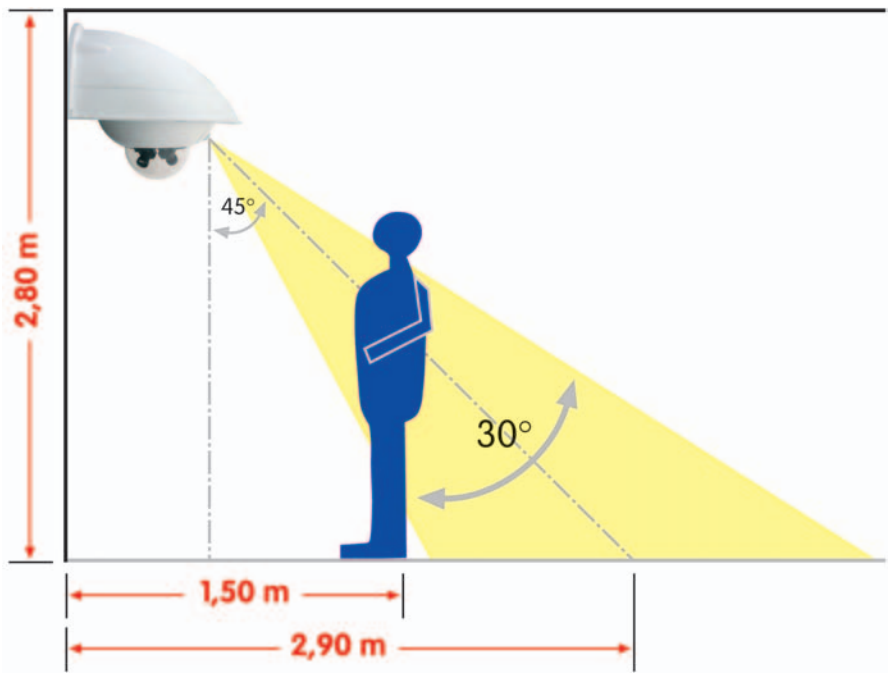
Caution: Notch for preventing damage from condensation

2.4.3 Installation Using the Outdoor Wall Mount

The lenses play a very important role when determining the correct position for the camera. In order to find the proper lenses for your application, you should consult the **lens table** available on **www.mobotix.com** in the **Products >Lens Options** section.

The exact positioning of the camera casing itself is largely dependent on the area that the camera's **PIR sensor** should cover. The exact angles should also be taken from the **lens table**.

Once you have finished these preparatory tasks, you should consider a test installation (camera mounted temporarily to the wall mount and connected to a laptop) in order to find the best position for the camera.



PIR specs:
Range about 10 m
Field of view of approx. +/- 15°

2.4.4 Deciding on the Connections (Network/ISDN/RS232)

First, decide on which camera connections you would like to use.

Network is key

Always use the network, if possible

In general, you should always provide a **network connection**, if technically possible (a WiFi connection using a **bridge** or similar would also be acceptable), since a network connection brings a number of advantages:

- The highest **frame rate** is only reached if the bandwidth is high enough; ISDN and GSM/GPRS will *not* suffice to deliver smooth video images.
- The camera's **external ring buffer** (storing the video/audio data on a file server) can only be used via a network connection.
- Compared to the **costs** of dial-up connections (ISDN, GSM/GPRS), the costs for file transfers and other accesses by and to the camera are reduced considerably when using a network that is already up and running.
- **Software updates** are best accomplished using a network connection, if dismounting the camera is not an option.

Free software updates

SIP telephony reduces costs

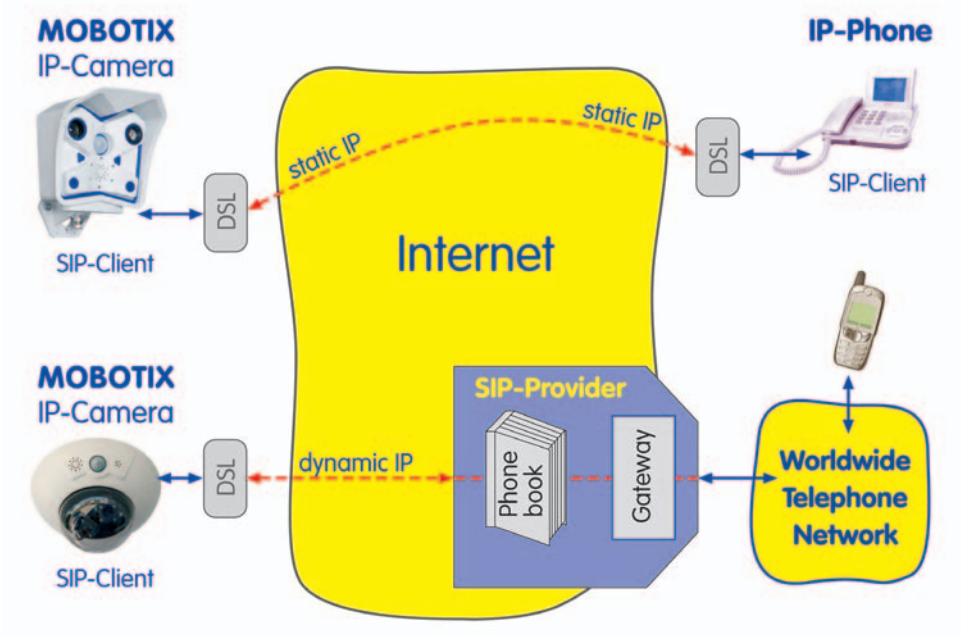
Internet telephony

ISDN connection of MOBOTIX cameras is not required if the network permits SIP connections for Internet phone connections. Thanks to the **SIP capabilities of the MOBOTIX D12D** (see chapter 9, *Telephony Features*, in the *Software Manual*), the camera can place voice calls (e.g. for alarm notification) via the network and can also accept incoming voice calls via Internet telephony. You can call the camera from a phone to obtain the time and date of the last event, for example.

ISDN-only operation

When operating the camera only at the ISDN, you need to install an additional ISDN cable (section 2.5.3, *Connecting the CAT5 Cables*), then attach the power supply using the pre-installed cable and the **NET/10BaseT** connector of the camera.

ISDN operation



Caution

In contrast to the MOBOTIX D10, it is not possible to use an ISDN NT and the S0 bus to supply power to the D12. Using the ISDN split cable and MOBOTIX PoE products (see section 2.3, Optional Accessories), the power can be injected into the ISDN data cable (8-wire cable required).

ISDN operation:
- Euro ISDN
- Japan
(USA not supported)

2.4.5 Selecting the Power Supply

The D12 supports the MOBOTIX PoE products for power injection into the network cabling and the Power-over-Ethernet standard IEEE 802.3af

In order to reduce the amount of cabling, you should always use the Ethernet cable (**NET/10BaseT**) to inject power into the camera cabling **(Power over Ethernet**).

For smaller installations, the MOBOTIX **Network Power Adapter** *MX-NPA-3-RJ* and the universal **power supply** *MX-SNT-E/U/GB/J/AUS01-30-RJ* is sufficient. Larger installations would benefit from one or more MOBOTIX **Network Power Boxes/ Racks** that are available for supplying power to 4, 8 or 20 cameras (*MX-NPR-4*, *-8* or *-20*). See section 2.3, *Camera Accessories*, for more information on these and other items or open **`shop.mobotix.com`** (**Products > Accessories** section).

MX-NPA-3-RJ: Easy installation for smaller systems

MX-NPR-4: For mounting in wiring cupboards; includes DIN rail clip

MX-NPR-8/20: 19" rack mount (2 rack units)

Network Power Adapter
MX-NPA-3-RJ

Network Power Box
MX-NPR-4

Network Power Rack
MX-NPR-8/20

Advantages of the MOBOTIX PoE Products

- Zero maintenance and reliable as the systems do not require fans.
- Higher reliability of the system as a whole, since standard switches without PoE can be used (lower risk of failure).
- Easy installation on DIN rails (*MX-NPR-4*) or in 19" racks (*MX-NPR-8/20*).

Since the MOBOTIX D12 supports **Power over Ethernet (IEEE 802.3af)**, you can also use PoE switches or routers for supplying power.

Section 3.3, *Connecting the Camera*, contains more information on the possible combinations of connections and power supply options.

Note

PoE components without fans increase overall reliability of the entire system

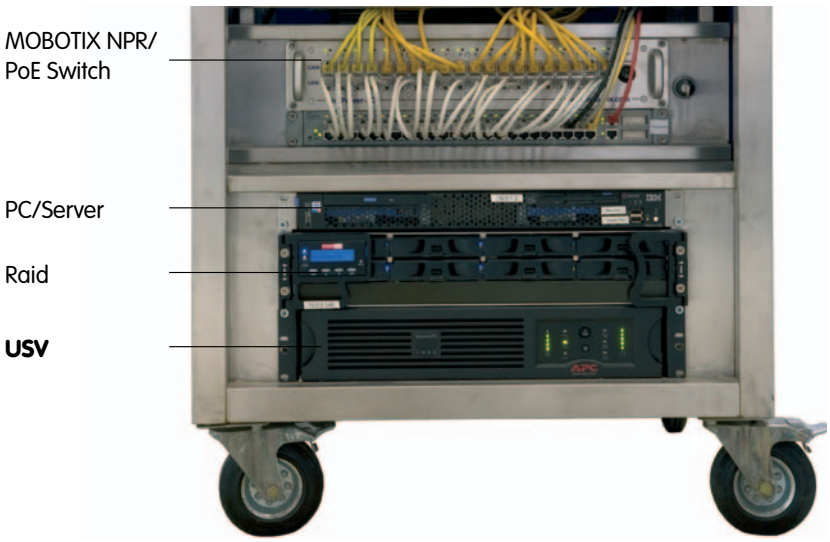
If you are using **Power over Ethernet (IEEE 802.3af) network components** for supplying power to the MOBOTIX D12, make sure that these components do not have a fan. Since the power consumption of MOBOTIX cameras is very low compared to other products, this increases the reliability of the entire system and expands the life cycle of these components.

2.4.6 Using Uninterruptible Power Supplies (UPS)

In order to maintain a continuous power supply even when utility power fails, you should install an uninterruptible power supply (UPS). These devices also provide full protection against electrical surges and voltage fluctuations and thus enhance the reliability of the system as a whole.

When using more powerful 19" rack-mounted USPs, you can also protect all other network components (e.g. switches, routers, PoE switches, etc.).

Since MOBOTIX cameras do not require any heating even in the wintertime, the power consumption of 3 W is quite low. This in turn means that you can centralize the USP-protected power supply by injecting power into the network cables (max. 100 m/300 ft.). This kind of protected power supply can be used either with MOBOTIX PoE products (MX-NPA-3-RJ plus external power supply or MX-NPR-4/8/20) or with PoE-compliant switches according to IEEE 802.3af.



2.4.7 Providing the Connections (Network/ISDN/RS232)

Once the camera position, the position of the cable outlets, and the method of power supply have been decided upon, the cabling should be installed.

Before mounting the MOBOTIX D12D-Outdoor, you should make sure that the network and ISDN connections are properly tested, so that proper functioning of the camera is guaranteed.

2.4.8 Further Options

D12D accessory for easily mounting to corners or poles

If you are intending to mount the camera to the corner of a building or a mast, you should consider using the **MOBOTIX Corner and Mast Mount**.

This mount will ensure that the outdoor wall mount is sealed from its rear side and thus guarantees the weatherproofness of the MOBOTIX D12D-Outdoor.

Mounting to corner

Mounted to a corner

Like the outdoor wall mount, the corner and mast mount is also made from weatherproof material and is just as robust and maintenance-free.

Mounted to a pole

Mounted to a pole

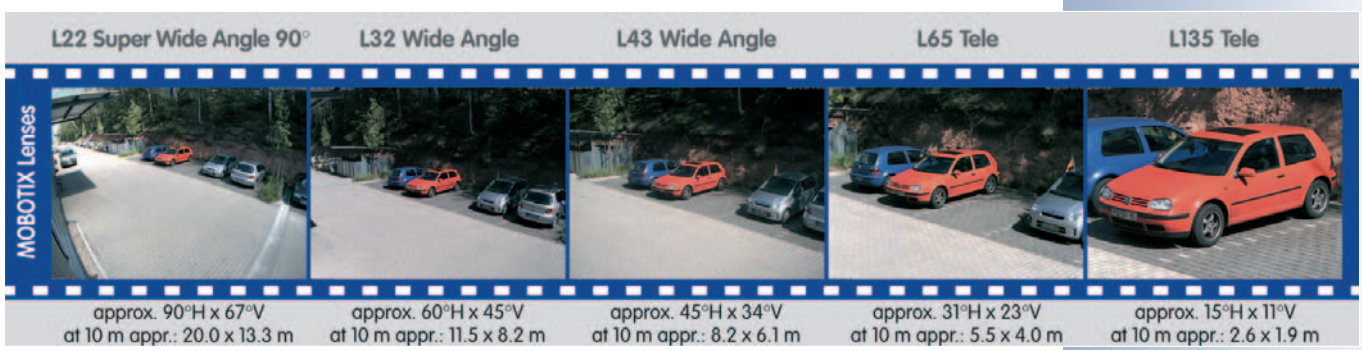
2.5 MOBOTIX D12 Lens Options

MOBOTIX currently offers five different lenses with M14 thread from **Super Wide Angle** (L22) with 22 mm to **Tele** (L135) with 135 mm focal length (equiv. to 35mm camera). Since MOBOTIX cameras are backlight-proof, these lenses do not require an auto iris. Without the iris as a mechanical component, these glass lenses are extremely robust and maintenance-free.

L22 Super Wide Angle 90°

You can use all available lenses for the MOBOTIX D12: **L22 Super Wide Angle 90°**, **L32 wide-angle**, **L43 wide-angle**, **L65 Tele** and **L135 Tele**. The **L22 Super Wide-Angle 90°** has very little distortion, even when using the 4x digital zoom of the D12. Mounting a camera with the Super Wide Angle lens in the corner of a room will allow you to see the complete room (see figure right).

The lenses are installed, focused and locked (lock ring) at the factory to prevent the lenses from losing focus (e.g. from vibrations).


L22 Super Wide Angle 90°
L32 Wide Angle
L43 Wide Angle
L65 Tele
L135 Tele
MOBOTIX Lenses
approx. 90°H x 67°V
at 10 m appr.: 20.0 x 13.3 m
approx. 60°H x 45°V
at 10 m appr.: 11.5 x 8.2 m
approx. 45°H x 34°V
at 10 m appr.: 8.2 x 6.1 m
approx. 31°H x 23°V
at 10 m appr.: 5.5 x 4.0 m
approx. 15°H x 11°V
at 10 m appr.: 2.6 x 1.9 m

Focal lengths of MOBOTIX lenses are always given as compared to a 35 mm camera!

To determine the lens you need, simply use a camera with zoom lens to find a matching MOBOTIX lens

Note

The focal lengths of MOBOTIX lenses do not reflect the actual focal length of the lenses, but the focal length (*Lxx* mm) converted to 35 mm camera format. For example, the MOBOTIX Super Wide-Angle lens has an actual focal length of 4 mm. This would be the equivalent of 22 mm on a 35 mm camera and thus leads to the designation *L22* for the lens.

Since the image sensors in digital cameras have different sizes, converting to 35 mm camera format provides for better comparing the image format and field of vision parameters of different lenses. Another benefit is that you can easily set a 35 mm camera (analog or digital) to the same focal length (*Lxx*) to obtain the same field of vision. This approach greatly facilitates lens selection.

Lens Table

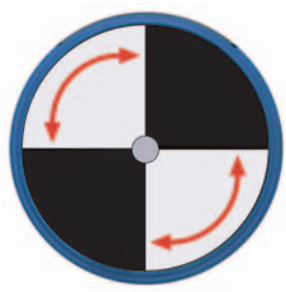
Order name	L22	L32	L43	L65	L135
Original image					
Equiv. 35 mm camera	22 mm	32 mm	43 mm	65 mm	135 mm
Focal length	4 mm	6 mm	8 mm	12 mm	25 mm
F-Number	2,0	2,0	2,0	2,0	2,5
Image angle horizontally	90°	60°	45°	31°	15°
Image angle vertically	67°	45°	34°	23°	11°
Installed at 1 m	**m**	m	**m**	m	**m**
• Image width	2,0	1,1	0,8	0,5	0,3
• Image height	1,3	0,8	0,6	0,4	0,2
Installed at 5 m	**m**	m	**m**	m	**m**
• Image width	10,0	5,7	4,1	2,7	1,3
• Image height	6,6	4,1	3,0	2,0	1,0
Installed at 10 m	**m**	m	**m**	m	**m**
• Image width	20,0	11,5	8,2	5,5	2,6
• Image height	13,3	8,2	6,1	4,0	1,9
Installed at 20 m	m	m	m	m	m
• Image width	40,0	23,0	16,4	11,0	5,2
• Image height	26,6	16,4	12,2	8,0	3,8
Installed at 50 m	**m**	m	**m**	m	**m**
• Image width	100,0	57,5	41,0	27,5	13,0
• Image height	66,0	41,0	30,5	20,0	9,5

2.6 Preparing the Camera

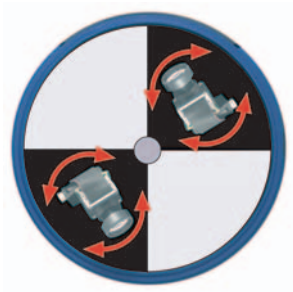
2.6.1 Presetting the Lenses, Connecting the Lens Cables

Before mounting the camera to a ceiling or wall, you should preset the lenses (item 2) and properly plan how the ribbon cables (item 5) are running. This will facilitate positioning the lenses and will also minimize the work at the camera's final location. See the following figures on how to properly position the lenses and how to run the ribbon cables.

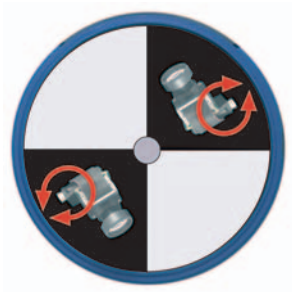
2.6.2 Basic Options for Positioning the Lenses



1. **Adjusting the lens carriers**



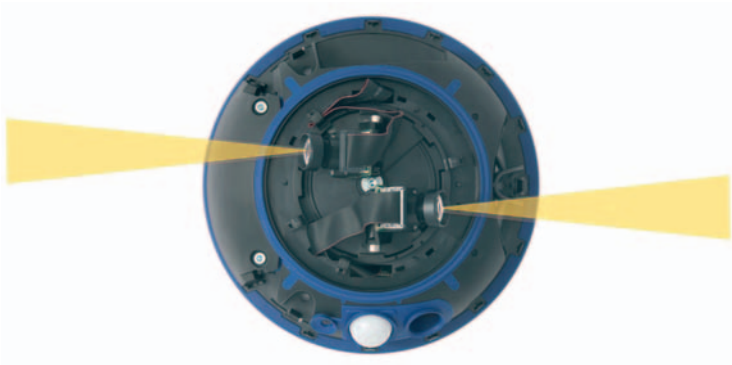
2a. **Adjusting the lens mounts and the lenses**

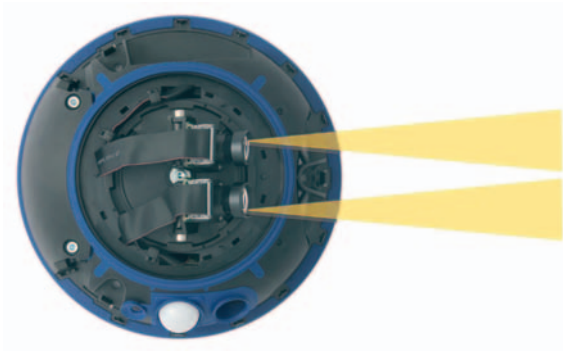


2b. **Adjusting the lens mounts and the lenses**

Flexible adjustment of the lens mounts

Examples for lens positioning:





Variable positioning of lenses for ceiling/wall mount!!

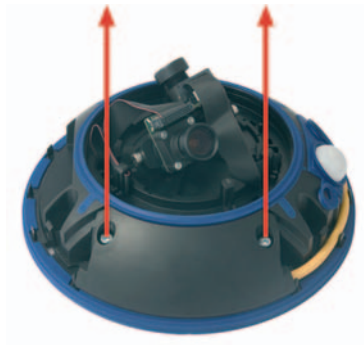
2.6.3 Connecting the CAT5 Cables

If the MOBOTIX D12D-Outdoor should use a **network (Ethernet)** and an **ISDN connection**, make sure to install a second CAT5 cable **(min. 50 cm for D12 only, 70 cm for D12 with outdoor wall mount)** and to guide it to the camera casing. In order to prevent confusing this cable with the pre-installed network cable, this cable should have a different color (e.g. **green** as in the figure) and it should be clearly marked as ISDN cable.

3 mm Allen wrench is included in the delivery

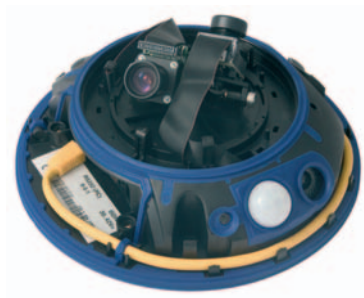
- Remove the M4x25 Allen screws of the **cable cover (item 7)** using the supplied 3 mm Allen wrench and lift the cover out of its seat.

Note: If the cable cover cannot be removed by hand, take a screwdriver to lift it out of its seat. Insert the screwdriver into the grooves shown below and gently lift the cable cover.

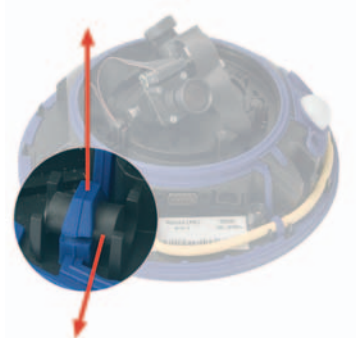


- Lead the CAT5 cable from the bottom of the camera casing through the right-hand opening and guide it around the camera casing in counter-clockwise direction (as seen from above). Make sure that this cable is running properly as shown in the figures below.

Lead the cables through the cable guides at the outer rim of the casing



- Remove the **rubber plug from the blue cable guide beneath the left side of the cable cover** and store the plug in a safe place.
  If you are only using one cable later on, close the unused cable guide again using this plug. This will ensure that the camera remains weatherproof (IP65), even if it has only one cable.



If you are only using one cable, close the unused cable guide with one of the supplied plugs

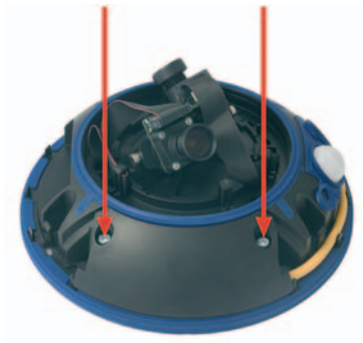
- Insert the cable into the cable guide.

- If you are using both connectors, the two cables should cross one another in front of the connectors.

Example:

Yellow: Ethernet
Green: ISDN

- Push the **cable cover (item 7)** back into its seat and fasten the two Allen screws M4x25. When attaching the cable cover, take care to properly align the cover with the seal of the camera casing and the two cable guides. This will ensure that the camera remains weatherproof (IP65).



Always mount the cable cover (IP65)!

- Properly lead the cable through the **cable guides** at the outer rim of the casing and make sure that the outer shell can be properly mounted later on.

Switching external relays using the RS232 interface

2.6.4 Connecting a Cable to the Serial interface (RS232)

If the **RS232 interface** of the MOBOTIX D12D-Outdoor is to be used for switching external **relays** (lights, alarm sirens, gates, etc.), evaluating **external sensors** (light barriers, etc.) or for **data connections** (weather station, GSM/GPRS modem, etc.), you need to install an additional **serial cable** (similar to the steps in section 2.5.2) before installing the camera.

Due to the design of the camera, a suitably **short connector** should be used to ensure that the cable cover still fits perfectly without jeopardizing the weatherproofness of the camera.

Please also make sure that the serial cable is thick enough to fill the cable guide beneath the cable cover so that no water can enter the area beneath.

Section 3.7, *Signal Input/Output (RS232 Interface)*, contains more information on the RS232 interface (pin-out, etc.).

Notes:

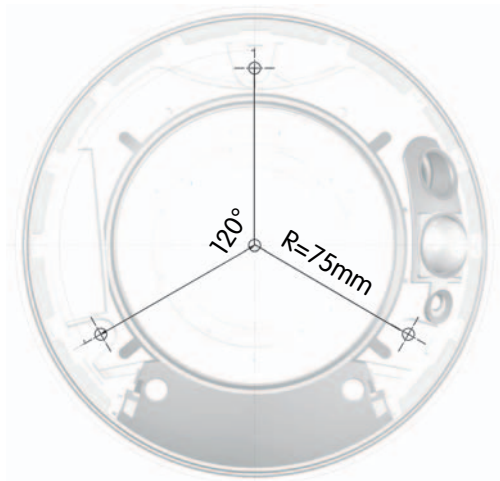
2.7 Mounting the Casing to a Wall or Ceiling, Connecting the Cables

2.7.1 Drilling the Holes for the Fixtures Using the Supplied Drilling Template

In order to affix the camera to a ceiling or wall, holes need to be drilled. Use the supplied *drilling template* to mark the position of the holes for the fixtures and the holes through which the cables will be led later on. **Remember to position the drilling template according to the direction of the camera's PIR sensor.**

Find the folded drilling template at the end of the manual!

Make sure that the drilling template is not scaled down when printing!

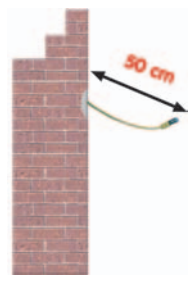


2.7.2 Planning and Connecting the CAT 5 Cables

(1) Position the camera casing over the cable exit.
(2) Lead the cables through the appropriate holes in the casing.
(3) Properly lead the cable(s) through the cable guides at the outer rim of the casing.
(4) Use corresponding screws to mount the camera casing to the wall or ceiling.

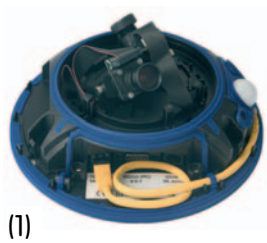
Note

Make sure that the **cable length** is appropriate. Check the following figure to see how the cables are running properly. Cable length should be **50 cm** when mounting the D12 and **70 cm** when mounting the D12D with Outdoor wall mount, always measured from the wall. There are two ways to accommodate cable that is too long (see figures):

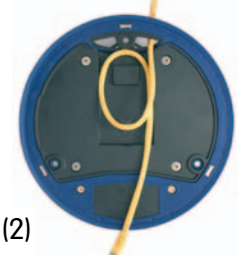


(1) Loop near the RJ45 connectors

(2) Loop beneath the camera



(1)



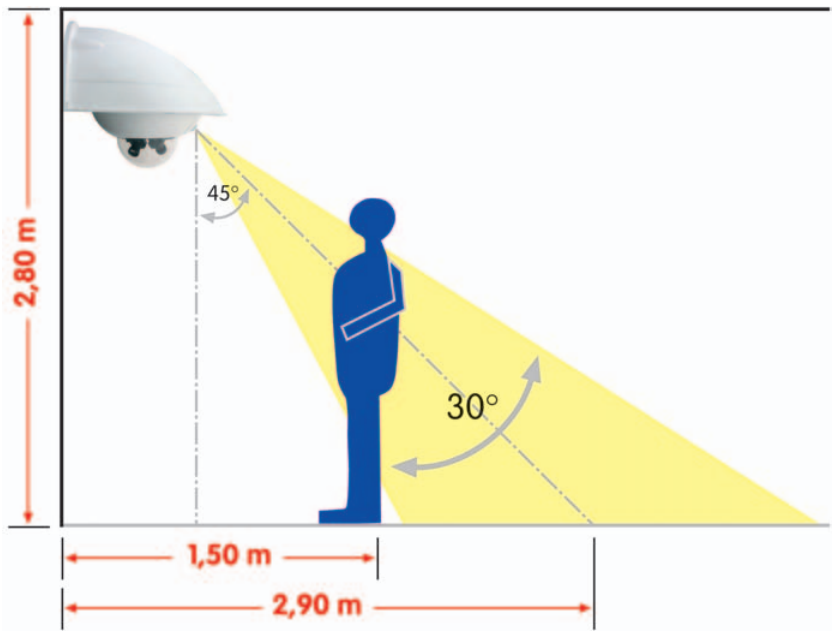
(2)

2.8 Installing the Camera with the Outdoor Wall Mount

2.8.1 Setting the Direction of the Passive Infrared Sensor (PIR)

When installing the camera, make sure that the PIR sensor points ino the direction where it is most useful. The PIR sensor reaches about **10 meters** and has a **field of view of ± 15°**.

The positions that are available depend on how high the MOBOTIX D12D-Outdoor has been mounted and the position of the camera on the **bottom plate (item 2)**, which can be adjusted in steps of 15 degrees (see also section 2.6.3, *Determining the Position of the Camera on the Bottom Plate*).



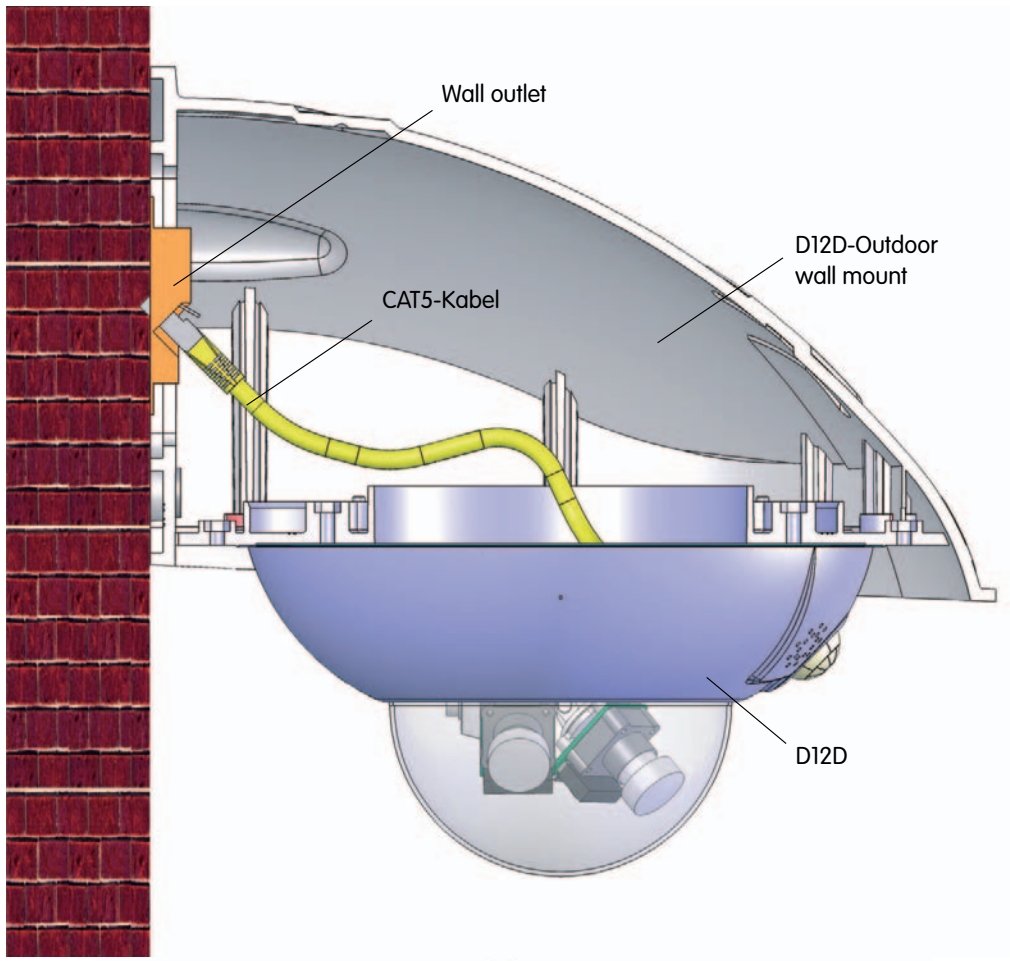
PIR specs:
range approx. 10 m
field of view approx. +/- 15°

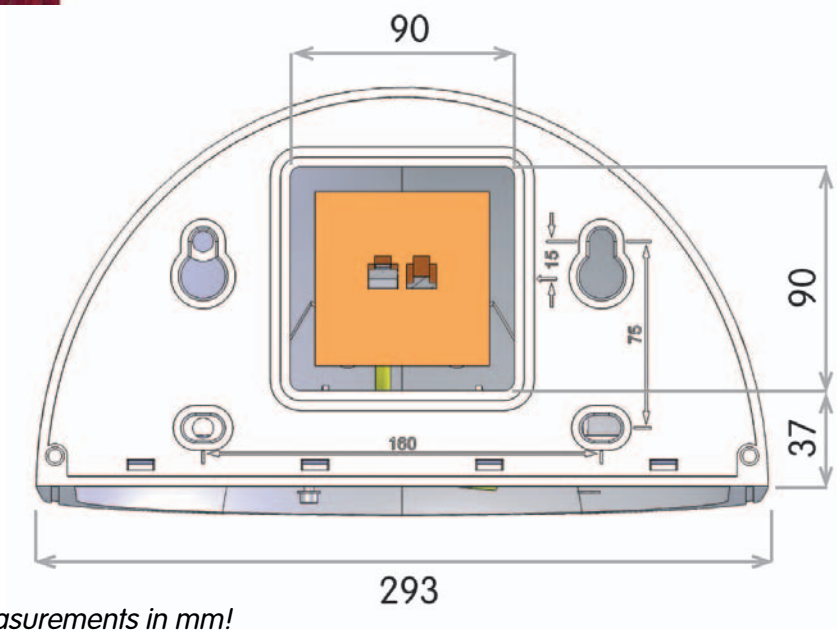
Hint: It may be useful to mark the ideal position of the PIR sensor on the bottom plate with a pencil.

2.8.2 Installing the Outdoor Wall Mount

Ideally, the outdoor wall mount is mounted over the tested wall outlet, which provides the connections (network, ISDN, Power over Ethernet) to the camera.

Mounting the Outdoor Wall Mount and the Camera





All measurements in mm!

Use the **supplied drilling template** (at the back of this manual) to mark the position for drilling the dowel holes and the holes through which the cables will be led later on. When printing or copying the drilling template, make sure that it is not scaled down!

Find the folded drilling template at the end of the manual!

Make sure that the drilling template is not scaled down when printing!

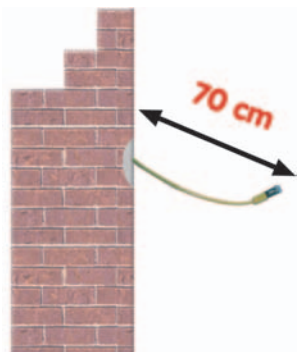
- Use the supplied **10 mm dowels (item 15), 8x70 mm screws (item 17) and dia. 8.4 mm washers (item 16)** for mounting the outdoor wall mount to the wall!

- Before installing the wall mount, attach the supplied **wall sealing (item 18)** to the back (wall) side using some silicone sealant. If the outdoor wall mount is mounted to a very rough surface, the top of the wall mount should be sealed to the wall using good-quality **silicone sealant**.

Apply silicone sealant!

- The rectangular opening at the wall mount's rear side has been designed to cover the wall outlet.

- If you *do not* use the pre-installed Ethernet cable, make sure that the **installed cable has a minimum length** of **70 cm** from the wall or wall outlet.



Cable length from wall: approx. 70 cm

2.8.3 Determining the Position of the Camera on the Bottom Plate

Once the outdoor wall mount has been mounted to the wall, the camera can be fixed to the underside of the **bottom plate (item 14)**. The **bottom plate** closes off the outdoor wall mount from below and also holds the camera.

The upper side of the bottom plate has 24 holes for the **M4 stainless steel hex nuts (item 20)**; it is thus possible to mount the camera in increments of 15 degrees. In order to facilitate the alignment process, all holes have numbers from 1 to 8.

The bottom plate closes off the outdoor wall mount from below and also holds the camera

Three **standard positions** are identified as described below:

PIR looking straight ahead: 1

- PIR sensor of the camera looks straight **ahead**: Use the holes marked with the number **1** for the **20 mm hex nuts (item 20)**.

PIR looking to the right: 3

- PIR sensor of the camera looks to the **right**: Use the holes marked with the number **3** for the **20 mm hex nuts (item 20)**.

PIR looking to the left: 7

- PIR sensor of the camera looks to the **left**: Use the holes marked with the number **7** for the **20 mm hex nuts (item 20)**.

2.8.4 Fixing the Camera to the Bottom Plate

In order to mount the camera to the bottom plate, use three of the supplied **Allen screws M4x25 mm (item 21)**, three **washers dia. 4.3 mm (item 22)** and the corresponding hex nuts.

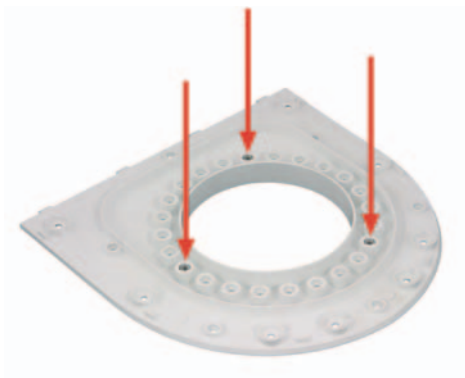
Caution

When fastening the Allen screws using the 3 mm Allen wrench, make sure that you do not scratch the camera dome!

- Guide the **connector cables of the camera** from below (smooth side) through the round opening of the bottom plate (item 14).

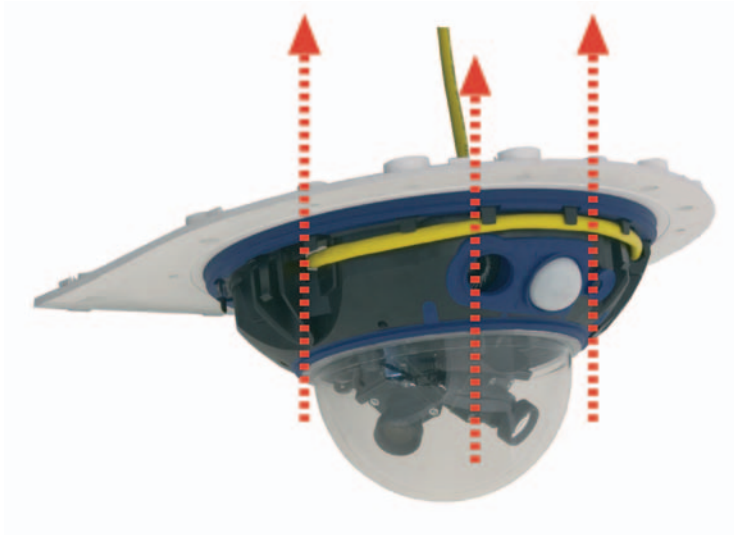
Mount the camera casing to the bottom plate *before* mounting the bottom plate itself

- Position the camera on the underside of the bottom plate so that the PIR sensor points in the desired direction and the hole in the casing to the right of the PIR sensor is situated above a hole in the bottom plate.
- Insert the **first M4 hex nut (item 20)** into the corresponding hole of the bottom plate, then use one **Allen screw M4x25 mm (item 21)** and a **washer dia 4.3 mm (item 22)** and *lightly* fasten the screw.
- Turn the bottom plate around and determine the number next to the hex nut you just inserted (example: PIR points straight ahead hole should have the number 1). Insert the remaining **M4 hex nuts (item 20)** into the other holes with the same number (1 in this case) and use the two **Allen screws M4x25 mm (item 21)** with the corresponding washers to fix the camera to the bottom plate.



PIR sensor of the camera looks straight ahead: Position 1

Montage der Kamera auf der Abdeckplatte



- **Make sure** that you have properly fastened the three **Allen screws M4x25 mm (item 21)**.

2.8.5 Connecting the Camera and Attaching the Bottom Plate

- Plug the **camera connector cables** into the appropriate wall outlets or adapters.

- Insert the **(straight) wall side of the bottom plate** into the back of the wall mount as shown in the figure.
- Push the front of the bottom plate upwards.
- **Mount** the bottom plate to the wall mount (**eight Allen screws M4x10 mm; item 19**) and make sure the screws are all properly fastened.

2.9 Completing the Installation

2.9.1 Establishing a Connection to the Camera

Establish a connection to the camera as described in section 3.4, *Establishing a Connection to the Camera*.

2.9.2 Adjusting the Lenses, Visual Check

Make sure that you see the live image of the camera on the monitor of your computer or laptop. Now adjust the lenses one by one until you see the desired image area on your monitor:

- Remove the camera **dome** using a lint-free cotton cloth.
- Release the lens' **lock ring**, adjust the **image focus** and tighten the lock ring again.
- Make sure that the lenses' ribbon cables are properly secured.
- Make sure that the **cable clamps** are properly seated. This will prevent the cable clamps from falling into the dome and obscuring parts of the image once the camera has been mounted.

Lock ring: Secure lenses against vibrations

Lenses are adjusted manually

Caution (tele lens only)

Scharfstellung: Durch den Linseneffekt der Domkuppel verändert sich der Scharfstellpunkt (Fokussierung) der Teleobjektive leicht.

Drehen Sie daher vor Montage der Domkuppel das Teleobjektiv um **ca. 90° im Uhrzeigersinn** (gesehen in Objektiv-Einschraubrichtung).

Kontrollieren Sie abschließend die Bildschärfe des Livebildes bei montierter Domkuppel und korrigieren Sie gegebenenfalls die Scharfstellung erneut.

- **Attach the dome** using the cotton cloth (see section 2.10.1, *Assembling the Camera*, item **(4)**) and finally check the focus of the lenses on the monitor.

Tighten the dome by turning **clockwise**

2.9.3 Attaching the Camera's Outer Shell

Once the wall mount and the camera have been assembled, it's time to attach the outer shell:

- Only attach the outer shell once you have finished setting the lenses' focus and mounted the camera dome.
- Hold the outer shell so that the round hole of the shell is positioned over the PIR sensor of the camera. Gently press the shell into the shell's seats in the camera casing.

For additional information on this topic, see section 2.10, *Assembling and Disassembling the Camera*.

The outer shell snaps into its seats at the camera casing by pressing gently down on the ring

Dismount the outer shell using the supplied custom tool (see section 2.8, *Assembling and Disassembling the Camera*).

Caution

The MOBOTIX D12D-Outdoor is only **weatherproof** if the camera casing has been mounted tightly to the bottom plate and both the camera dome and the outer shell are properly seated.

2.10 Assembling and Disassembling the Camera

2.10.1 Assembling the Camera (Detailed Description)

For adjusting the D12, you need the supplied Allen wrench; for attaching the dome, a lint-free cotton cloth is required (see also section 2.9, *Cleaning Instructions*).

(1) Inserting the lens units and fixing the central lens screw

Insert the lens units into the seating. Insert the central lens screw and gently tighten it to hold the lens units in place.

Caution: Avoid over-tightening the screw as this might damage the camera casing.

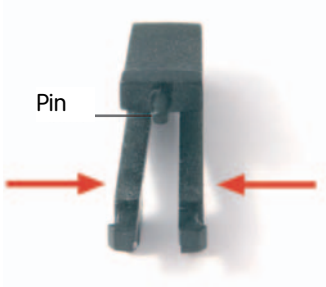
(2) Connecting the ribbon cable to the lens units

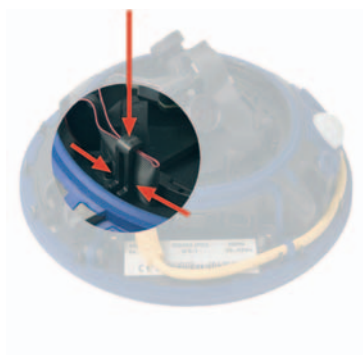
Insert the connectors of the ribbon cable into the pin heads of the lens units. While doing so, make sure that the **lens unit's ribbon cable connectors are pointing upwards into the dome**. This will ensure that the lenses can be positioned freely later on, without putting any strain on the ribbon cables. Make sure that the ribbon cables are running properly along the inside of the dome's rim. The ribbon cables must not obstruct the line of vision of the lenses!

Caution:
Make sure that the lens ribbon cable connectors point into the dome.

(3) Securing the ribbon cables using the cable clamps

To do so, gently squeeze the clamps between your fingers and insert the clamps into their seats along the inside of the dome's rim. Make sure that the pin of each clamp is properly positioned in the corresponding hole of the camera casing.





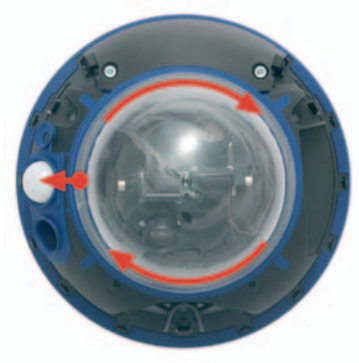
Press clamp together cautiously, then insert into the seats; make sure the pin is snug in the hole!

Tighten the dome by turning **clockwise**

Align the **mark** of the dome with the PIR sensor

(4) Attaching the dome

Take a cotton cloth and attach the dome to the camera by turning it in a **clockwise direction**. This will prevent you from accidentally repositioning the lenses during the rest of the installation process.



Important: Position the mark on the dome pointing towards the camera's PIR sensor and gently seat the dome into the threads. This will prevent misaligning the threads of the dome!

Note: The camera comes with an additional tinted dome with reduced transparency (25%)!

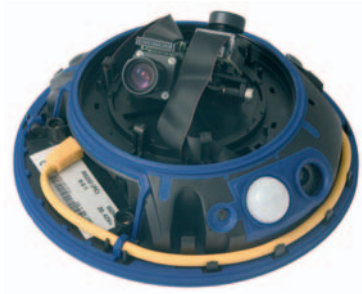
(5) Attaching the Ethernet and ISDN cables

Lead the CAT5 cables through the appropriate holes in the casing. Make sure that the cables are running properly as shown in the figures below. Properly lead the cable through the cable guides at the outer rim of the casing. Follow the same steps and position any other cables (ISDN, RS232) just like the Ethernet cable. If you are only using one cable, close the unused cable guide with one of the supplied rubber plugs. This will ensure that the camera remains weatherproof (IP65*), even if it has only one cable (see bottom right figure).

*Only Outdoor models

Lead the cables through the cable guides at the outer rim of the casing

If only one cable is used, close the unused cable guide with the supplied rubber plug



(6) Installing the cable cover

Install the cable cover using the 3 mm Allen wrench and the corresponding screws. Take care to properly align the cover with the seal of the camera casing. This will ensure that the camera remains weather-proof (IP65*).

*Only Outdoor models

Always mount the cable cover!

(7) Installing the outer shell

Hold the outer shell so that the round hole of the shell is positioned over the PIR sensor of the camera. Gently press the shell into the shell's seats in the camera casing. Only install the outer shell of the camera once the camera has been properly mounted (ceiling or wall), the lenses are properly positioned and in focus, and the dome has been mounted.

The outer shell snaps into its seats at the camera casing by pressing it gently down

Dismount the outer shell using the supplied custom tool (see section 2.8.2, *Disassembling the Camera*).

2.10.2 Disassembling the Camera (Detailed Description)

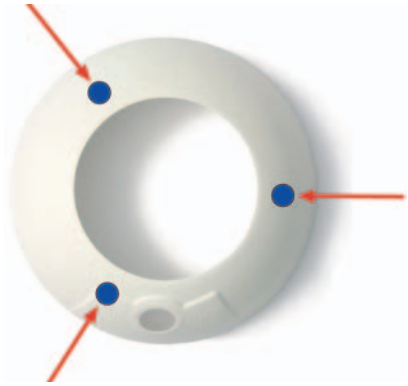
For disassembling the outer shell of the D12, you need the supplied custom tool; for dismounting the dome, a lint-free cotton cloth is required (see section 2.9, *Cleaning Instructions*).

(1) Removing the outer shell

For security reasons, the outer shell can only be removed using the supplied custom tool. Proceed as shown in the figure below:

- Disengage the outer shell using the supplied custom tool. Insert the tip of the custom tool into the three small holes of the shell, one by one. Gently lift the shell near each hole to loosen the shell.
- Remove the outer shell from the camera.

For security reasons, the outer shell can only be removed using the supplied custom tool

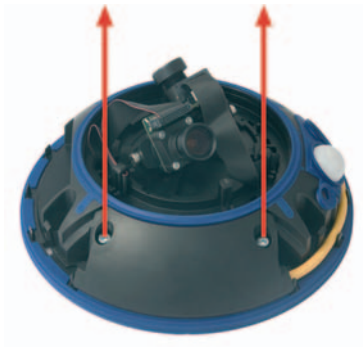


(2) Removing the cable cover

Remove the 4 mm Allen screws of the cable cover and detach the cover.

3mm Allen wrench is included in the delivery

Note: If the cable cover cannot be detached by hand, take a screwdriver to lift it out of its seat. Insert the screwdriver into the grooves shown below and gently lift the cable cover.

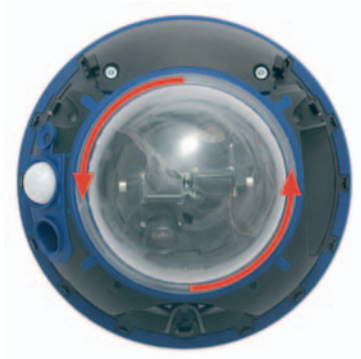


(3) Removing the Ethernet and ISDN cables

Remove the cables one by one by gently pressing down the lock and pulling each cable out of its socket. Now take the cables out of the cable guides at the bottom of the casing and remove them through the appropriate holes in the casing. **Take care to avoid any damage to the cable guides at the bottom of the camera casing** (see *figure*).

(4) Removing the dome

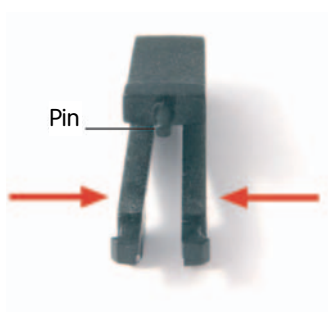
Take a cotton cloth and remove the transparent dome by turning it in a **counter-clockwise direction**.

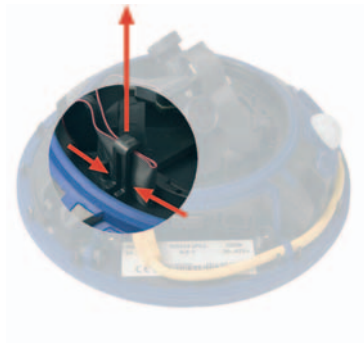


Dismount the dome by turning it **counter-clockwise**

(5) Removing the cable clamps in the dome's interior

Gently press the sides of the cable clamps and lift the clamps from their seats.





(6) Removing the lens connectors

Press the clamps on the side of each ribbon cable connector, then gently pull the connectors from the lens' pin header.

(7) Remove the central lens screw and the lens units

Remove the central lens screw using the supplied 3 mm Allen wrench. Lift the lens units out of their seats.

Notizen:

2.11 Cleaning Instructions

Soft cotton cloth and mild detergent to clean the dome

2.11.1 Cleaning the Dome

- In order to protect the dome from being scratched and from getting dirty, only handle the dome using a soft cotton cloth or the protective plastic in the camera's shipping box.
- You should clean the dome at regular intervals. Always use a lint-free cotton cloth for this purpose.
- If the dirt is more persistent, add a mild alcohol-free detergent without abrasive particles.
- Make sure you instruct cleaning personnel on how to clean the camera.

2.11.2 Cleaning the Lenses

- If the lenses are dirty from the installation process, clean the lenses using a lint-free cotton cloth. Make sure that the lens is still in focus after cleaning and adjust the lens' focus if required.

2.12 Wiring, Fire Prevention, Lightning and Surge Protection

When installing the wiring in or out of buildings, make sure you always adhere to the relevant regulations on wiring, fire prevention and protection against lightning.

MOBOTIX recommends having MOBOTIX cameras installed only by certified specialists accustomed to installing network devices and having proper respect for the applicable regulations regarding lightning protection and **fire prevention** as well as the current technology for preventing damages from electrical surges.

Find more information at an institution such as the **International Electrotechnical Commission** (IEC, **www.iec.ch**) or at a manufacturer of protection devices against lightning and electrical surges, such as Dehn (**www.dehn.de**).

2.12.1 Wiring

When installing the wiring, make sure you follow these guidelines:

- **Data cable:** Make sure you only use double-shielded CAT 5/7 cable (**S/STP**) for Ethernet connections. If the power is supplied on a data cable using the Network Power Adapter or similar means, the same applies to the ISDN cable (see section 3.3, *Connecting the Camera*).
- **Outdoors:** Installing the camera outdoors requires special precautions and measures regarding the cables as well as lightning and surge protection (see section 2.10.3, *Lightning and Surge Protection*).
- **Wire lengths:** The cable segments must not exceed the maximum allowed cable lengths in order to ensure proper data transfer (see section 3.3, *Connecting the Camera*).

- **Avoid induction:** When running data cables parallel to existing regular power lines or high-voltage wires, make sure you observe the minimum distances to the power cables.

2.12.2 Fire Prevention

When installing the power lines to the camera, make sure you always adhere to the relevant regulations on wiring and fire prevention at the site of the installation.

2.12.3 Lightning and Surge Protection

To prevent damage from lightnings and surges, make sure you follow these guidelines:

- **Lightning conductors:** In areas exposed to lightning (e.g. on roofs), a distance holder (1 m higher, 1 m away from the camera) and proper lightning conductors need to be installed in order to prevent lightning strikes into the camera and to ensure that the energy of a lightning strike is properly led to the ground.
- **Surge protection:** Make sure you have installed proper protection against electrical surges in order to prevent damage to the camera, the building and the network infrastructure. This includes surge protectors for 19" racks, adding an uninterruptible power supply (UPS) to the MOBOTIX camera, and installing surge arresters or similar for routers, switches, servers, etc.

3 OPERATING THE CAMERA

3.1 General Procedure

The MOBOTIX camera **does not require any software installation**; all you need is your preferred browser with JavaScript support to operate the camera. Thus, the MOBOTIX camera is supported by all common operating systems (such as **Windows**, **Macintosh** and **Linux, ...**).

3.1.1 Establishing the Power Supply of the Camera

You can choose between the following options:

MOBOTIX PoE products do not have any fans and are robust and reliable!

PoE components (IEEE 802.af) should not have fans as this will increase the overall reliability of the entire system

- **External power supply and Network Power Adapter (MX-NPA-3-RJ)**: Power supply of one camera injected into the network cabling (max. length 100 m/110 yd.), from the NPA to the **10BaseT/NET** connector of the camera (see section 2.10, *Optional Accessories*).
- **Network Power Box/Rack (MX-NPR-4, or 8/20)**: Power supply of 4/8/20 cameras injected into the network cabling (max. length 100 m/110 yd.), from the NPR to the **10BaseT/NET** connector of the camera (see section 2.10, *Optional Accessories*).
- **Power over Ethernet**: Power supply using network components that are conforming to the PoE standard **IEEE 802.3af**.

3.1.2 Connecting the Camera

The camera has been set at the factory to support the following connection methods:

Computer settings:
- IP address: 10.1.0.11
- Netmask: 255.0.0.0
- Gateway: none
- DNS: none

- **Ethernet interface of the camera** (10/100 Mbps Ethernet): Connect directly from a computer (using a crossover cable) or by using a Network Power Adapter or a switch and a regular patch cable. Launch a browser and enter the IP address printed on the camera label (e.g. **`10.1.0.99`**).
  If your network does not support a Class A network (i.e. **`10.x.x.x`**), your PC or laptop will have to be set temporarily to such a network address. For operating systems that allow multi-homing (Windows 2000, Windows XP, Linux, Mac OS X), you can set a second IP address in the **`10.x.x.x`** network.

In the RAS box (computer):
- camera phone number
- User: linux
- Password: tux

- **ISDN interface of the camera:** From a computer with ISDN card using a RAS connection (linux/tux). Launch a browser and enter the IP address printed on the camera label (e.g. **`10.1.0.99`**).

Once a connection has been established, click on the **Admin Menu** button to start configuring the camera. The **Admin Menu** controls all network settings (IP address, netmask, DHCP, etc.), ISDN behavior and other options.

Note

After first booting the new MOBOTIX camera or after resetting to factory defaults, accessing the Administration menu (**Admin Menu** button) will automatically start the **Quick Installation** wizard. This is where you configure the most important camera parameters in a step-by-step manner. If you have completed the Quick Installation wizard at least once, the standard Administration menu will open when you click on the **Admin Menu** button.

Always use Quick Installation for initial configuration

The configuration follows these five general steps:

a) Establish the first connection (Ethernet or ISDN).
b) Set the parameters for the desired connection type (Ethernet/ISDN) using the **Quick Installation**.
c) Set the event control (events, actions and messages); see chapter 7, *Events, Actions and Messages*, in the *Software Manual*.
d) Set the storage parameters (FTP, internal and external ring buffer storage).
e) Store the configuration in the camera's permanent storage (flash).

Live image: http://preparkcam.mobotixserver.de

3.2 Overview of the Configuration Settingss

Always use Quick Installation for initial configuration:

Admin Menu > Quick Installation

- **Using the Quick Installation wizard**

  After first booting the camera or after resetting it to factory defaults, any access to the administration menu (**Admin Menu** button) will start the **Quick Installation**.

  This wizard will guide you through the most important settings of the camera (configuration of the network interface, image control, etc.) and can also be used to reset the camera to its factory settings.

  It is also recommended to use **Admin Menu > Quick Installation** later on as well, e.g. if you would like to change connection parameters or add a new connection type.

User: admin
Password: meinsm

Setup Menu

- **Administration and setup of the camera**

  Basic configuration tasks of the camera (e.g. passwords, interfaces, software updates) are carried out from the administration menu (**Admin Menu** button) which requires the corresponding access rights (*admins* group).

  Open the **Setup Menu** (button) and find the dialogs for changing the image, event and recording settings in the **Image Control** and **Event Control** sections. These options are also available for users belonging to the *users* group.

  Some of these settings can be changed using the corresponding pull-down menus above the image on the Live screen.

Recommendation:
Always use factory image settings!

- **The image settings are already optimized**

  The factory image settings of MOBOTIX cameras deliver excellent images for most application scenarios and should not be changed. If you do wish to make changes, your changes should be minor and gradual. If you would like to reset changes without resetting the complete configuration to factory defaults, you can use the **Factory** button at the bottom of the dialog to reset only this dialog's settings. If you would like to reset all image settings, you may do so using the **Manage Settings > Restore Image Settings** pull-down menu above the image on the Live screen.

- **All changes are temporary**

  All changes to the configuration are only temporary and can thus be tested easily. Restoring the old configuration settings can be achieved using the **Restore** button in most dialogs or by running **Admin Menu > Restore last stored configuration from flash** (see also section 5.9, *Managing Settings*, in the *Software Manual*).

Make sure to permanently store changed parameters!

Once you have finished configuring the camera, you should always **store the settings in the camera's permanent memory**. You can do so in the **Configuration** section of the administration menu (**Admin Menu > Store current configuration into flash memory**) or in each dialog (clicking on **Set** at the bottom of each dialog will temporarily set the changes; clicking on **Close** will ask you to store the complete configuration in the camera's permanent memory).

The **Configuration** section of the administration menu provides more functions for storing, copying and managing camera settings. For additional information on this topic, see chapter 5, *Basic Camera Configuration*, in the *Software Manual*.

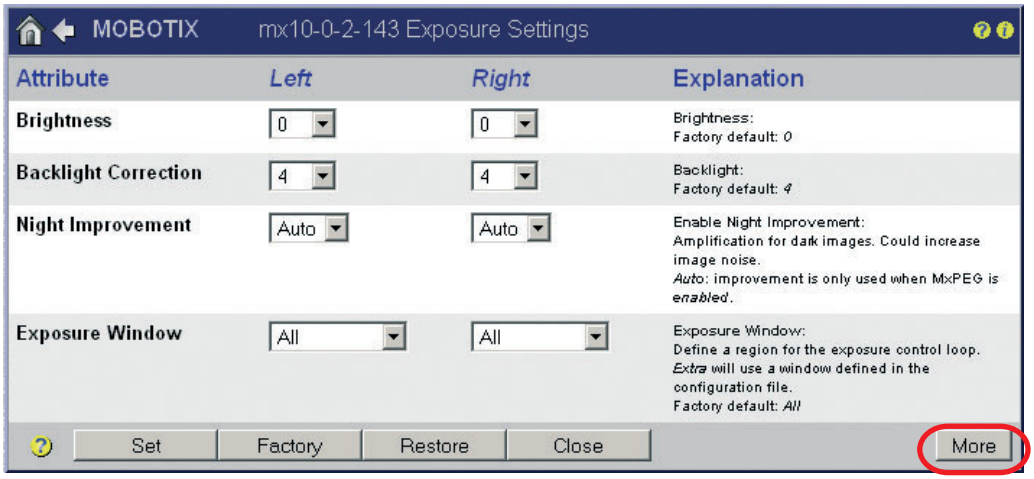
- **A camera that keeps time**

Automatic time synchronization using a time server

Apart from a multitude of possibilities for controlling the camera using time (time tables, holiday and vacation, scheduled tasks, etc.), the camera can also **synchronize its internal clock**. This allows you to keep the camera in synch manually with a computer or fully automatic using a time server. The camera can use NTP time servers or time servers providing Time Protocol (RFC 868). For additional information on this topic, see section 5.4.2, *Date and Time / Time Zones and Time Servers*, in the *Software Manual*.

- **MOBOTIX cameras can do "More"**

In order to provide a better overview, some of the camera dialogs hide less-often used options when showing the dialog. These dialogs have a **More** button in the bottom right corner; click on it to display the advanced options. If all options are displayed, the **Less** button appears. Clicking this button will hide the advanced options.



Click on the More/Less buttons to show/hide the advanced options

3.3 Anschließen der Kamera

Use the MOBOTIX MX-NPR-4 for smaller installations

Use the 19" MOBOTIX Netpower rack-mount units to supply power to 8 or 20 cameras (MX-NPR-8 or 20)

Uninterruptible power supply (UPS) should be installed

Hinweise

The MOBOTIX M12 **can only be powered using the 10BaseT/NET connector of the camera**. In order to inject the power supply into the network cabling, **MOBOTIX PoE products** have proven reliable and easy to install for one camera (**MX-NPA-3-RJ**), for up to four cameras (**MX-NPR-4**) and for 8 or 20 cameras (**MX-NPR-8/20**; see section 2.3, *Optional Accessories*).

It is highly recommended to use uninterruptible power supplies (UPS), which also protect the cameras and the network components against electrical surges. For more information on this topic, read section 2.4.6, *Using Uninterruptible Power Supplies (UPS)*.

Maximum Cable Lengths (Ethernet)

Data/power connection: max. **100 m (110 yards)**

3.3.1 Ethernet: Power Supply Using a Network Power Adapter (MX PoE)

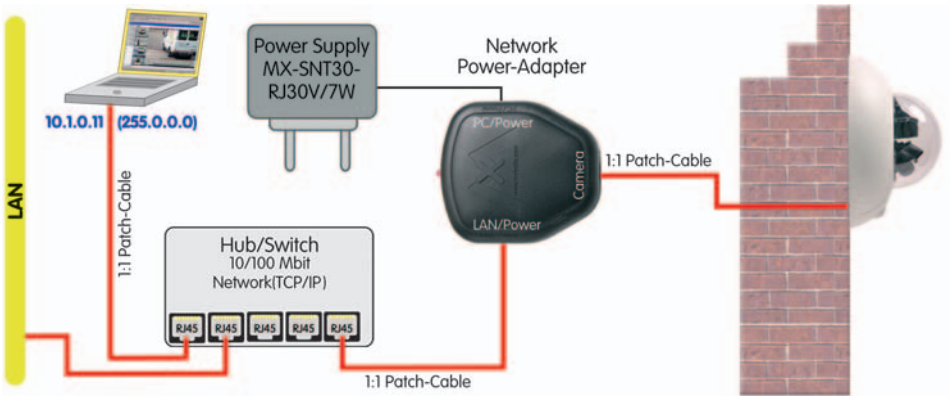
Make sure that you only use switches or routers that support the **10/100 Mbps Ethernet interface** of the camera and check the LED activity of the corresponding port of the switch or router. For additional information on this topic, see section 4.11, *Operating Many Cameras*, in the *Software Manual*.

(1) Connect the **Camera** connector of the Network Power Adapter to the **10BaseT/NET** connector of the camera.

2a) **Connecting to an Ethernet switch or router:**

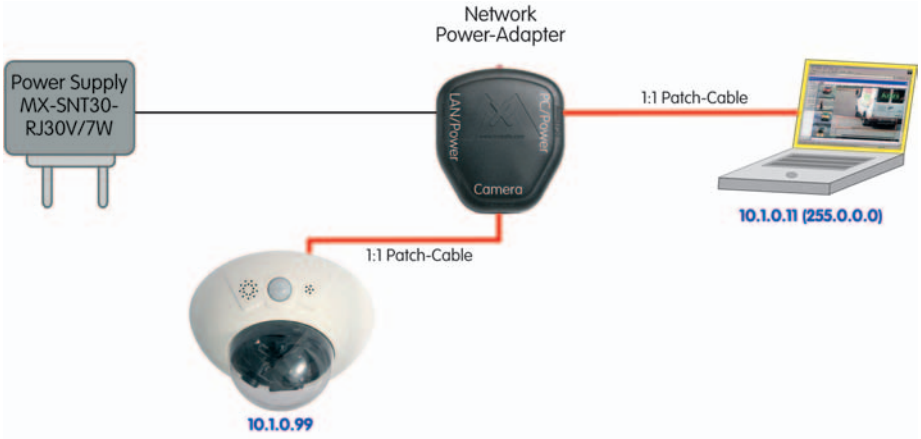
- Connect the **LAN/Power** connector of the NPA to an Ethernet connector of the switch/router or the Ethernet wall outlet.
- Plug the RJ45 connector of the external power unit into the **PC/Power** connector of the Network Power Adapter.

The Network Power Adapter replaces the cross-over cable when directly connecting to a computer



2b) **Connecting directly to a computer:**

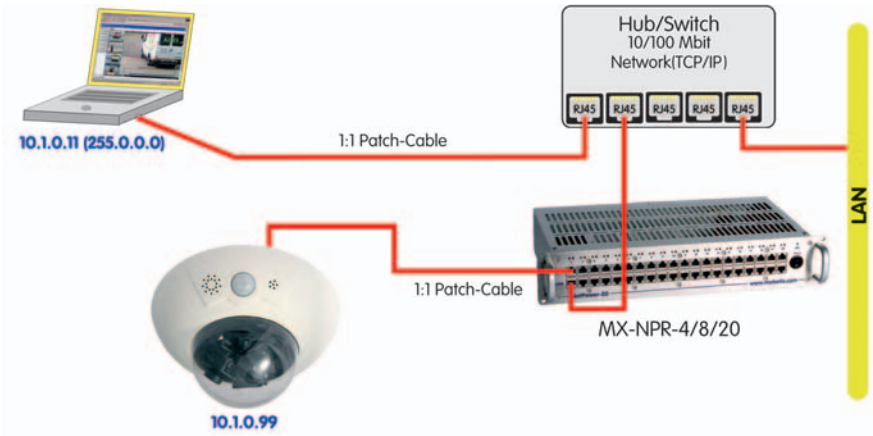
- Connect the **PC/Power** connector of the Network Power Adapter to the Ethernet port of the computer.
- Plug the RJ45 connector of the external power unit into the **LAN/Power** connector of the NPA.



The Network Power Adapter replaces the cross-over cable when directly connecting to a computer

3.3.2 Ethernet: Power Supply Using a Network Power Rack (MX PoE)

- Connect the **CAM** connector of the **Network Power Rack (MX-NPR-8/20)** to the **10BaseT/NET** connector of the camera.
- Connect the **LAN** connector of the Network Power Rack to an Ethernet connector of the switch/router.



MOBOTIX PoE products have zero maintenance and are reliable as the systems do not require fans

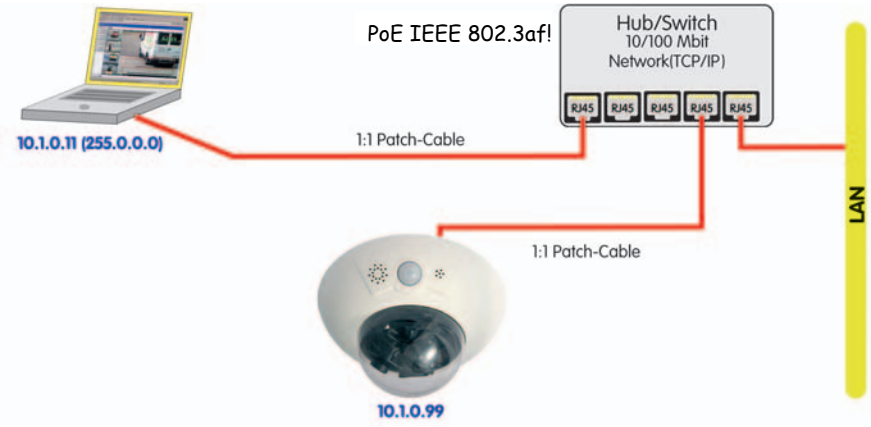
A **Network Power Box (MX-NPR-4)** is connected in the same way.

Advantages of MOBOTIX PoE Products

- Zero maintenance and reliable as the systems do not require fans.
- Higher reliability of the system as a whole, since standard switches without PoE can be used (lower risk of failure).
- Easy installation on DIN rails (*MX-NPR-4*) or in 19" racks (*MX-NPR-8/20*).

3.3.3 Ethernet: Power Supply Using PoE Products (Power over Ethernet)

- Connect the **10BaseT/NET** connector of the camera to the Ethernet connector of the switch/router. The network components need to support the **PoE standard IEEE 802.3af**.



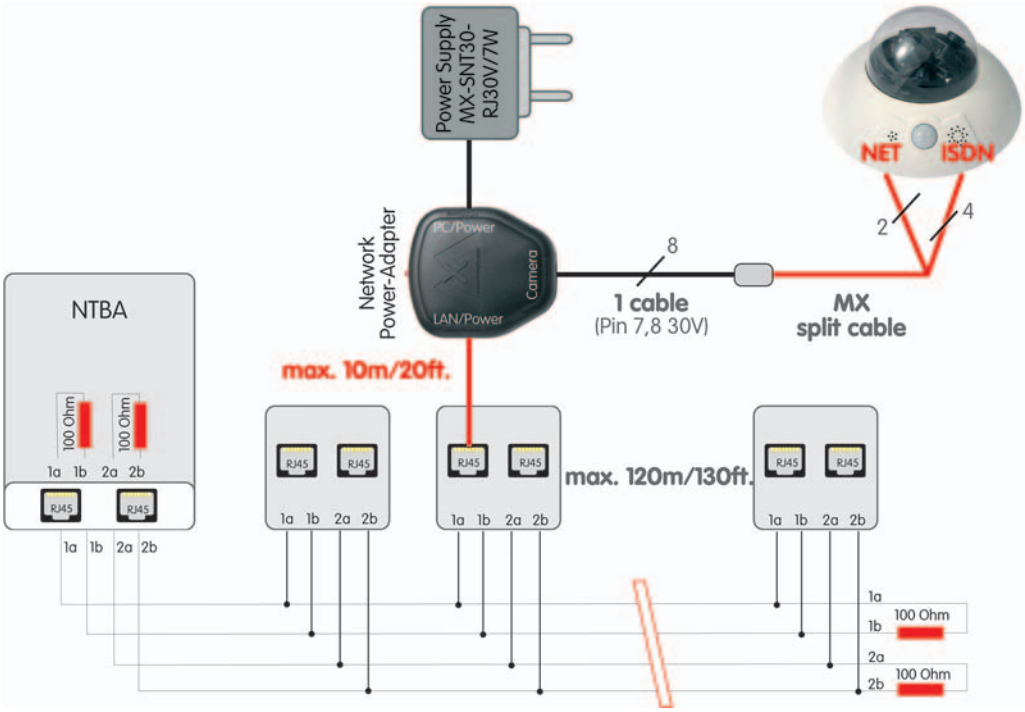
PoE components without fans increase overall reliability of the entire system

Note

If you are using **IEEE 802.3af Power over Ethernet network components** for supplying power to MOBOTIX cameras, make sure that these components do not have a fan. Since the power consumption of MOBOTIX cameras is very low compared to other products, this increases the reliability of the entire system and expands the life cycle of these components.

3.3.4 ISDN: Power Supply Using a Network Power Adapter

(1) Push the designated connector of the ISDN split cable (*MX-OPT-ISDN-SPLIT;* optional accessory) into the **10BaseT/NET** connector and the remaining cable into the **ISDN** connector of the camera.
(2) Use an 8-wire (patch) cable to connect the **Camera** connector of the Network Power Adapter to the socket of the **ISDN** split cable.
(3) Connect the **LAN/Power** connector of the Network Power Adapter to the ISDN S0 bus/NT.
(4) Plug the RJ45 connector of the external power unit into the **PC/Power** connector of the Network Power Adapter.



Maximum Cable Lengths (ISDN)

Connection to **ISDN outlet**: max. **5-10 m (16 to 33 ft.)**
Connection to **NT (without termination resistors)**: max. **5-10 m (16 to 33 ft.)**
Connection to **NT (with termination resistors)**: **120 m (130 yd)**

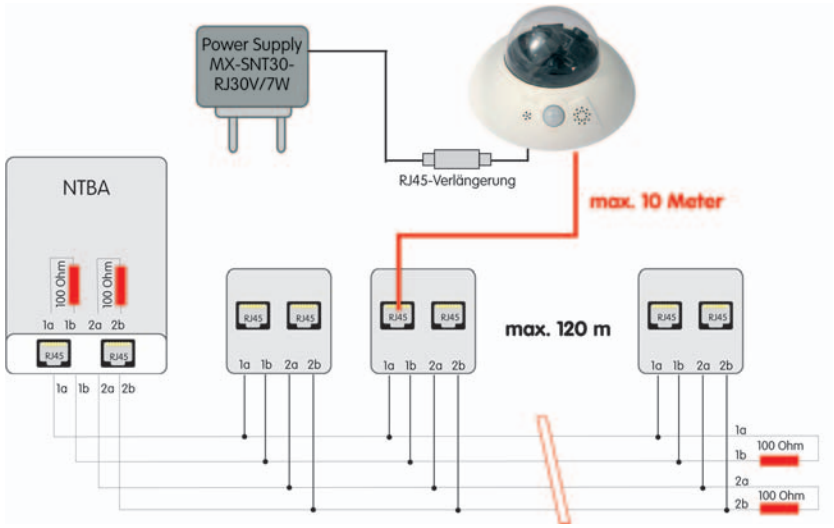
Make sure not to exceed the maximum cable lengths

Caution

Missing termination resistors and wrong cable lengths are the most common installation errors!
Always observe the instructions regarding maximum cable lengths and proper ISDN termination!

3.3.5 ISDN: Directly Supplying Power Using the External Power Supply

1) Connect the **ISDN** connector of the camera to the S0 bus/NT.



Maximum of 12 wall outlets, with up to 8 devices attached

ISDN is a bus system, which requires termination (100 Ohms) at both ends

2) Plug the RJ45 connector of the external power supply into an RJ45 extension cable and plug the extension into the **10BaseT/NET** connector of the camera.

3.3.6 Ethernet and ISDN

In order to use Ethernet and ISDN **simultaneously**, plug the Ethernet and ISDN cables into the corresponding connectors of the camera. **Power is supplied only via the Ethernet cable and the 10BaseT/NET connector of the camera** (using **MOBOTIX PoE products** or Power over Ethernet according to IEEE 802.af).

3.3.7 Camera Startup Sequence

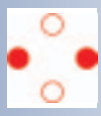
As soon as the camera's power supply has been established, the six LEDs will show the progress of the starting sequence:

- **Hardware test**: After the power has been connected, the LEDs 1 and 5 will light up for about two seconds. The camera's computer (boot loader) checks the camera hardware. At this time, the camera also provides a method for booting with the factory IP address by holding the magnetic side of the custom tool on the spot labeled **"L" button** in the figure. See 3.5, *Starting the Camera Using the Factory IP Address*, for more information.
- **Backup system test**: The camera checks the operating system. **In case of an error**, the camera will start using the backup operating system, allowing you to re-install the system software.
- **Unpacking the OS**: The boot loader unpacks the operating system from the Flash EPROM and copies it to the camera's memory (the LEDs 1 and 5 light up for about 10 seconds).

  Starting the OS: The Linux operating system unpacks its data to the ramdisk and initializes the system. All operating system components are verified against their checksums in order to detect changes.
- **Boot mode**: As soon as LEDs 5 and 0 light up, you can start the camera using DHCP by holding the magnetic side of the custom tool onto the spot labeled **"L" button** in the figure. See section 3.6, *Starting the Camera With an Automatic IP Address (DHCP)* for more information.
- **Starting the applications**: Once the application software is running, the LEDs 1 and 5 will start blinking (provided they have not been switched off for this configuration). You can now access the camera using a web browser.

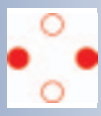
Note

During the startup sequence, the LEDs will always light up, even if they have been deactivated in **Admin Menu > LED Setup**.



Hardware Test

Backup System Test



Unpacking/ Starting OS

Boot mode

Ready

Signals of the camera LEDs:

0 On

1 Camera

2 Network

5 Camera

3.4 The First Image from the Camera

As soon as the Ethernet connection (see section 3.4.1, *Preparing the Ethernet Connection*) or the ISDN connection (see section 3.4.2, *Preparing the ISDN Connection*) has been established, you have the following possibilities to get the first image from the camera:

Working with the web-based user interface only requires a web browser with activated JavaScript!

- **Direct access using a browser** (section 3.4.4, *The First Image in the Browser*)
- **Display the camera using MxViewer** (free Windows client for MOBOTIX cameras; section 3.4.7, *The First Image in MxViewer*)
  Open the browser-based user interface of the camera to complete the remaining configuration tasks (see section 4.3, *The Live Screen in the Browser*, in the *Software Manual*).

3.4.1 Preparing the Ethernet Connection

For this example, we will use a camera with the factory IP address **`10.1.0.99`**. **Replace this IP address with the IP address of your camera**. You will find this address on a **small sticker on the camera**. Accessing the camera is always the same and is independent of the connection type: simply enter the camera's IP address in the address field of the browser (see section 3.4.4, *The First Image in the Browser*).

Caution:
Netmask 255.0.0.0

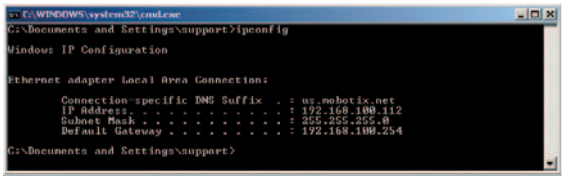
Hinweis
Sie können die **Ansage der IP-Adresse der Kamera** abrufen, indem Sie den **Taster "L"** mit der magnetischen Seite des Spezialwerkzeugs kurz betätigen.

Your computer has to have a network or a wireless interface, and it should be in the same subnet as the camera. If your n etwork also uses IP addresses of a class A network (e.g. **`10.x.x.x`**, network mask **`255.0.0.0`**), you should be able to access the camera directly (provided no other network device uses the same IP address).

Open a Command Prompt (Windows):
Start > Run, enter "cmd", then press [Return]

Determine the IP address of your computer:

- Open a command shell (Windows) or a terminal (Linux/UNIX/OS X) and enter the following command:


C:\Documents and Settings\support>ipconfig
Windows IP Configuration
Ethernet adapter Local Area Connection:
Connection-specific DNS Suffix . : us.mobotix.net
IP Address. . . . . : 192.168.100.112
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.100.254
C:\Documents and Settings\support>

  Windows 2000/XP: **`ipconfig`**
  Linux/UNIX/OS X: **`ifconfig`**

You will find the IP address of your Windows computer under **IP address**; for Linux/UNIX/OS X computers, search for the **inet address** parameter of the **eth0** device (the first network interface). If your computer does not use an IP address in the 10.x.x.x range, you should change the network configuration of your computer or add a new IP address (see below).

Make sure that no other network device uses the camera's IP address:

- Open a command shell (Windows) or a terminal (Linux/UNIX/OS X) and enter the following command:
  `ping <factory IP address>`

The factory IP address is printed on the sticker on the camera housing

Example: 10.1.0.99

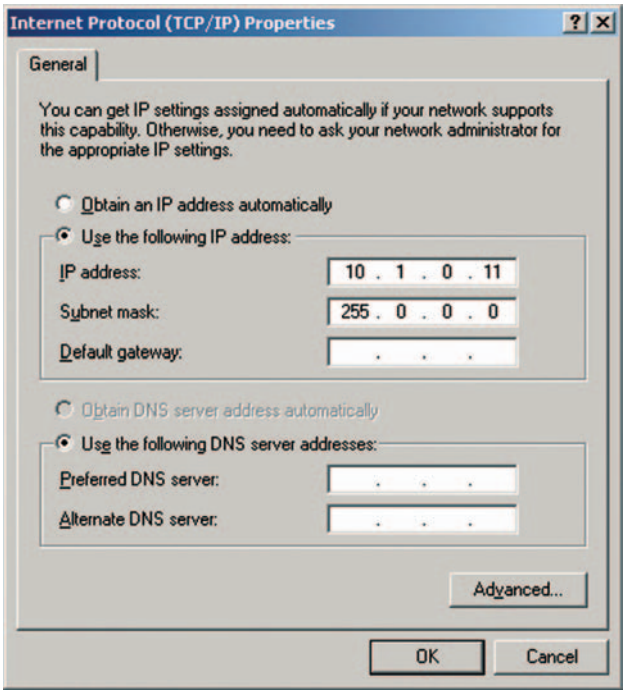
Make sure that you use the IP address of your camera instead of 10.1.0.99!

If you receive an answer from another network device although the camera is not connected, you will have to remove that device until you have reset the MOBOTIX camera to a free IP address. We recommend using the Quick Installation wizard for this task.

If your computer does not use an IP address in the 10.0.0.0 network (e.g. a 192.168.x.x or 172.x.x.x network), you should temporarily set a new IP address in the 10.x.x.x range:

Windows 2000/XP

(1) Open the **Network Connections** and open the **Properties of LAN Connection**.
(2) Double-click **Internet Protocol (TCP/IP)**.
(3) On the **General** tab, activate the **Use the following address** option.
(4) Enter an IP address (e.g. **`10.1.0.11`**) in the class A network (10.x.x.x) that is unique in your network and that is not the same as the camera's IP address.
(5) Close all dialogs by clicking on **OK**.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
10 . 1 . 0 . 11
Subnet mask:
255 . 0 . 0 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

Setting up an IP address on Windows computers

Linux/UNIX/OS X

(1) Open a terminal as **`root`** user and enter the following command (**`eth0`** usually is the first network interface):
`ifconfig eth0:1 10.1.0.11`

The computer now has the additional IP address **`10.1.0.11`**, allowing it to access the camera with its factory IP address in the 10.x.x.x network (**`10.1.0.99`** in this example).

Setting up a second IP address on Linux/UNIX computers

3.4.2 Preparing the ISDN Connection

Requires an ISDN interface card in the PC

Your computer must have a properly configured ISDN card to establish a connection. If your network has an ISDN router, contact your network administrator for more information.

(1) Create a new Point-to-Point connection (PPP) on your computer.
(2) Enter **`linux`** as user name and **`tux`** as password.
(3) Enter the phone number (a free MSN) of the ISDN port to which you connected the camera. If your computer is connected to an internal telephone system, make sure that you enter the prefix that is required to obtain an outside line.
The MOBOTIX camera can **automatically determine the MSN** (see section 5.2.2, *Quick Installation Pages in Detail*, in the *Software Manual*).
(4) Establish the connection.

Assign different MSNs (phone numbers) to the cameras if they are on the same S0 bus

By factory default, the camera will react to every MSN of an ISDN port (you may change this in **Admin Menu > ISDN Connections**).

Note

Default ISDN access credentials for RAS connections
User Name: **`linux`**
Password: **`tux`**

3.4.3 Simultaneously Using ISDN and Ethernet Connections (Gateway)

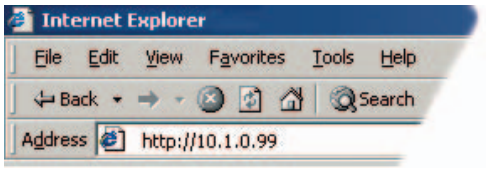
In most cases, MOBOTIX cameras will be used either on an Ethernet LAN **or** on ISDN, not both. The gateway (for accessing computers outside of the local network) needs to be set manually for Ethernet; it is usually obtained automatically for ISDN.

In order for the camera to open an ISDN dial-out connection while both Ethernet and ISDN are used, the **default route** has to be set to the preferred ISDN dial-out connection (**Admin Menu > ISDN Data Connections > Dial-Out Connections**). Section 5.2, *Quick Installation* in the *Software Manual*, contains more information on this topic.

Routing allows reaching different network addresses using different connection types/routes

If you would like to use connections to different networks for other tasks (e.g. back-up to an FTP server), you can set more network routes in **Admin Menu > Routing**. See the **Routing** topic in the camera help for more information.

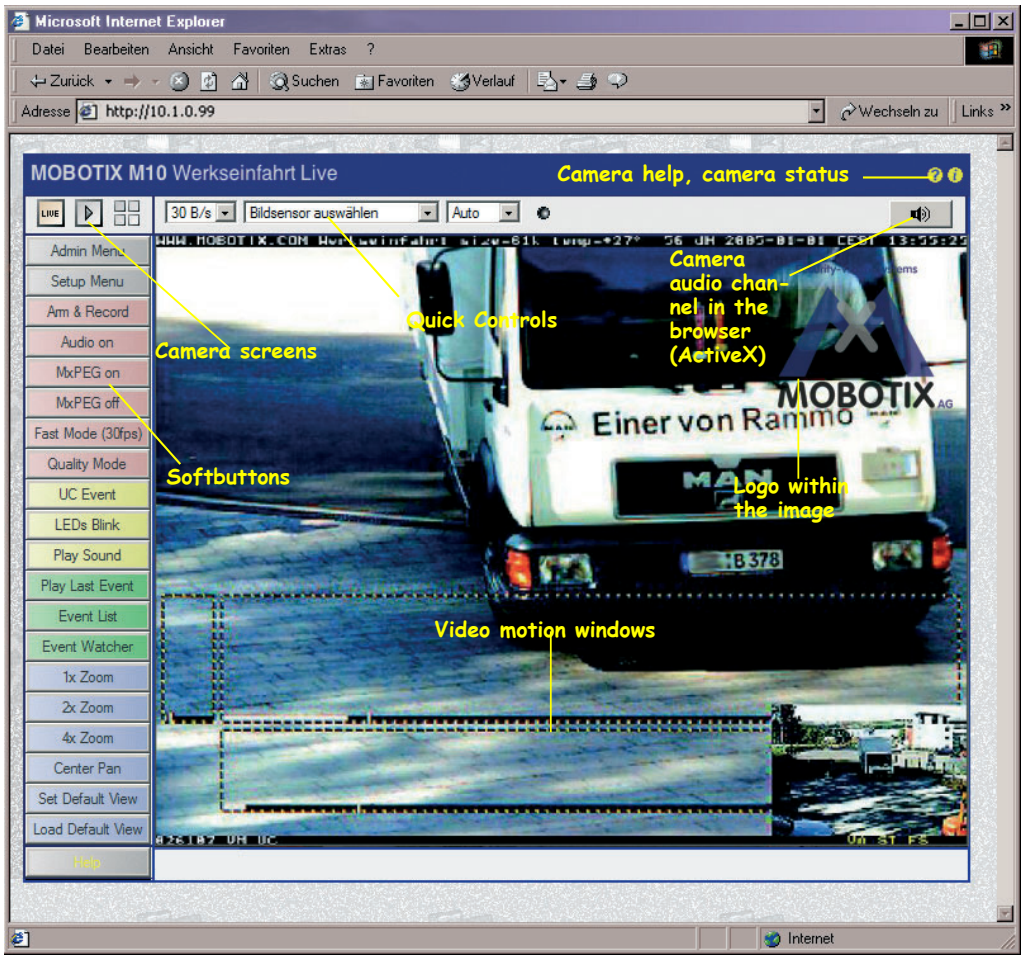
3.4.4 The First Image in the Browser



Now that you have successfully started the camera for the first time, you can access the camera using your preferred browser to see the live video stream and the user interface. Internet Explorer, Mozilla, Firefox, Safari or any other graphical browser with activated JavaScript is suitable. The operating system is of no importance, even PDAs can be used without any problems.

Camera access: http://10.1.0.99 (example IP)

The factory IP address is printed on the sticker on the camera



Administration menu:
User Name: **admin**
Password: **meinsm**

Softbuttons are **freely configurable**

After entering the camera's IP address in the browser address bar (e.g. **`http://10.1.0.99`**), you will see the **Live** screen of the MOBOTIX camera with its user interface controls, such as softbuttons, buttons for the different camera screens, **pull-down menus** (*Quick Controls*), icons for accessing the **online help** and the **camera status**, and status information elements above and below the live image.

Make sure that you use the IP address of your camera instead of 10.1.0.99!

Note

Credentials for accessing the Administration Menu

User Name: **`admin`**
Password: **`meinsm`**

Changing the factory IP address: Always use Admin Menu > Quick Installation

Audio announcement of the IP address works on **all cameras**

Notes

Factory Defaults: Every MOBOTIX camera has its individual factory IP address (e.g. **10.1.0.99**). You will find this address on a small sticker on the camera housing. If you have started the camera using DHCP or you have set the IP address manually, use the new IP address (e.g. **192.168.0.99**) instead of the factory IP address. Pressing the **"R" key** on the back of the camera will prompt the camera to announce its current IP address. For additional information on this topic, see section 3.5, *Starting the Camera With an Automatic IP Address (DHCP)*.

Troubleshooting: If your web browser does not show the camera's **Live** screen after you have entered the IP address, you should try to locate and resolve the error as described in chapter 12, *Troubleshooting*, in the *Software Manual*.

MxViewer: In order to see the live image of the camera, you can also use other applications or the integrated programming interface of the MOBOTIX camera. **MxViewer** for Windows is such an application and is provided **free of charge** by MOBOTIX. Besides its ability to display fast live video of up to **30 cameras simultaneously at 30 fps each** on one PC, MxViewer also allows recording and playing back video clips with realtime audio via the network and can control pan/tilt heads using a joystick or the mouse. Download the newest version of MxViewer from the MOBOTIX website. The website contains more information on MOBOTIX systems as well as the MxViewer help.

3.4.5 Additional Information

Camera Help

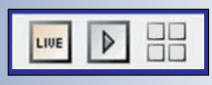
For more information on this topic, see the **News** and **Functional Overview** pages in the online help of the camera's browser interface. Click on the yellow icon in the top right corner to open the camera's online help.

Camera status

In order to obtain more information on the camera and its current configuration, open the Camera Status dialog by clicking on the yellow icon in the top right corner of the camera's browser interface.

Another source of information on all dialogs and parameters of the MOBOTIX camera is the **Reference Manual** that you can download from **www.mobotix.com**. The Reference Manual consists of the MOBOTIX camera's online help in one PDF file.

3.4.6 Camera Screens in the Browser



Per factory default, the MOBOTIX camera first shows the **Live** screen. You can set a different start page in order to prevent others from changing the settings. In addition to this, you can assign user names and passwords to prevent unauthorized access or you can restrict access to the current live image only by setting the **Guest** screen as the start page.

Use the Administration menu to set the camera screen that should appear initially when accessing the camera IP address

The following screens are available:

- **Guest** screen: Only shows the current live image with reduced frame rate (see section 4.7, *Guest Screen*, in the *Software Manual*).
- **Live** screen: Shows the current live image and allows changing the image and event settings of the camera (see section 4.3, *The Live Screen in the Browser*, in the *Software Manual*).
- **Playback** screen: Shows all recorded images or video clips with extended functions for searching and downloading images, regardless of where the images are stored (in the internal or the external ring buffer on a file server or PC; see section 4.4, *The Playback Screen in the Browser*, in the *Software Manual*).
- **MultiView** screen: Shows multiple cameras or the last events in a freely definable layout (see section 4.5, *The MultiView Screen in the Browser*, in the *Software Manual*).
- **PDA** screen and **PDA Event List**: Both screens are optimized for PDAs with a focus on fast data transmission with low bandwidth requirements (GSM, GPRS) on devices with small displays (PDAs, mobile phones, sub notebooks). The **PDA Event List** in particular gives a quick overview over the last events since the live image is not transferred (see section 4.6, *The PDA Screen*, in the *Software Manual*).

http://10.1.0.99/pda opens the PDA screen

Note
Use MxViewer's **Layout Editor** to design the layout of the camera display on the screen (number of cameras, arrangement, size). The editor supports Drag&Drop, MxPEG clips, and allows using building or property plans and similar graphics as a background image.

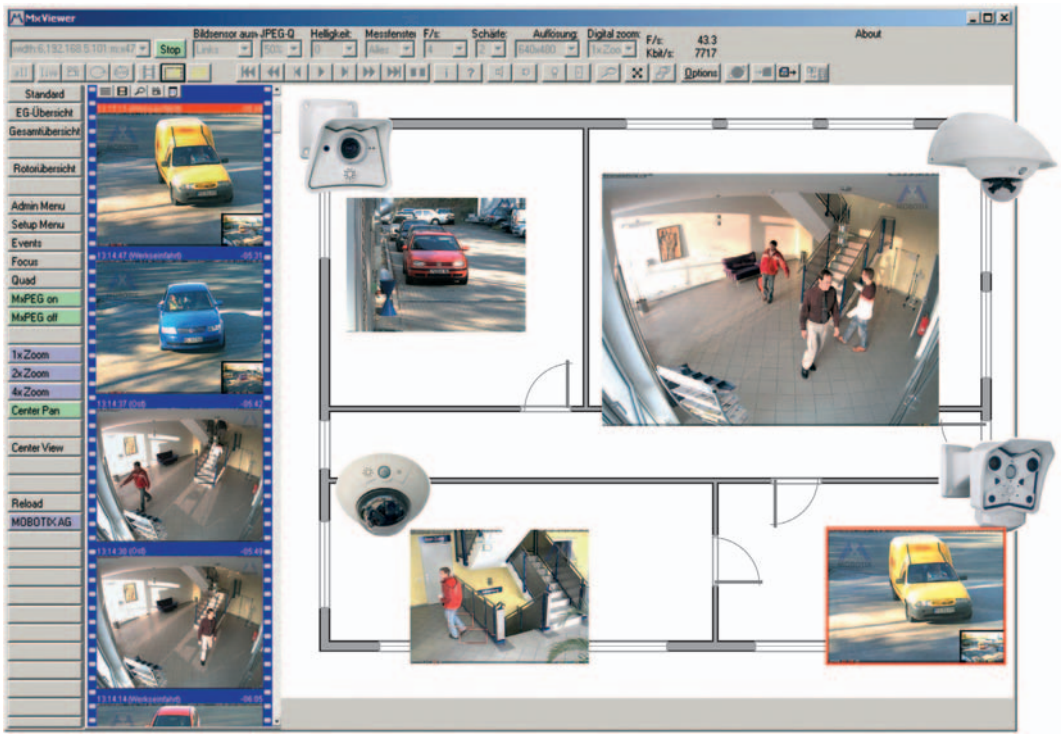
For more information on camera screens, see the **online help** of the camera's browser interface. Click on the yellow ? icon in the top right corner of the Live screen to open the corresponding page of the online help.

Live/Playback/MultiView: Click on ? to open the online help pages for the camera screens

3.4.7 The First Image in MxViewer

Download MxViewer free of charge from www.mobotix.com

The **MOBOTIX MxViewer** is a free Windows application that allows displaying **multiple MOBOTIX cameras** on one computer and provides alarm management functions. It can easily handle displaying **30 cameras with CIF resolution simultaneously** at **30 fps each** in **MxPEG** format on one standard PC with Intel Pentium 4 and 3 GHz.



MxViewer Windows client with alarm list, background image and freely positioned cameras

MxViewer can do quite a bit more than simply display the video and audio data from MOBOTIX cameras. The unique features of MxViewer and the MOBOTIX cameras create a full-featured security system: Intelligent alarm handling, various ways of arranging the camera views on different layouts (MultiView screens), ability to display cameras that are sending alarm notifications, and integrated camera management functions.

Further Information on MxViewer

For further information on **MxViewer**, download the *MxViewer User Manual* from **www.mobotix.com**:

- Saving and loading MxPEG video clips
- Creating and editing layouts using the Layout Editor

Further Information in the Software Manual

- Section 4.3.5: *JPEG, MxPEG and Audio*
- Section 4.3.6: *Background Information on JPEG, MxPEG and Audio*
- Section 4.10: *Fast Video Streaming*

Note

Use MxViewer's **Layout Editor** to design the layout of the camera display on the screen (number of cameras, arrangement, size). The editor supports Drag&Drop, MxPEG clips, and allows using building or property plans and similar graphics as a background image.

The Layout Editor of MxViewer offers wide-ranging possibilities for creating different layouts

Installing and Starting MxViewer

Follow these steps to install MxViewer:

- Download the newest version of MxViewer:
  www.mobotix.com > Services > Software Downloads
- Download and install the **`MSI`** file (Windows Installer file).

Download MxViewer free of charge from www.mobotix.com

You can also download the **`EXE`** file for manual installation:

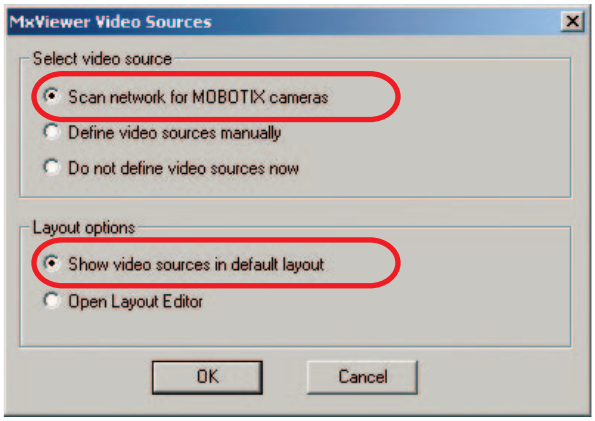
- Download the **`ZIP`** file to a suitable folder and unpack it.
- Create a shortcut by right-clicking on **`MxViewer.exe`** in this folder.
- Copy the shortcut to the desktop.

Double-click the shortcut or the program file itself to start MxViewer.

Defining Video Sources

If you start MxViewer for the first time on a computer without having defined any video sources (MOBOTIX cameras) before, the **MxViewer Video Sources** dialog will appear.

Defining cameras as video sources



Depending on the task at hand, select the appropriate option in the **Select video sources** group:

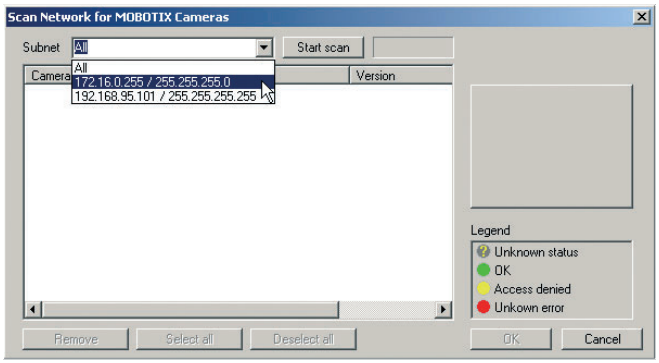
- **Scan network for MOBOTIX cameras** (default): Click on **OK** to open the **Scan Network for MOBOTIX Cameras** dialog. MxViewer will automatically scan the subnet for MOBOTIX cameras and will display a list of camera IP addresses.
- **Define video sources manually**: Click on **OK** to open the **Define Video Sources Manually** dialog and manually add the cameras.

In the **Layout options** group, select **Show video sources in default layout**. This will prompt MxViewer to automatically generate a standard layout that comprises all video sources (i.e. cameras) once they have been defined either automatically or manually.

Automatically Searching MOBOTIX Cameras on the Same Subnet

MxViewer displays the **Scan network for MOBOTIX cameras** dialog:

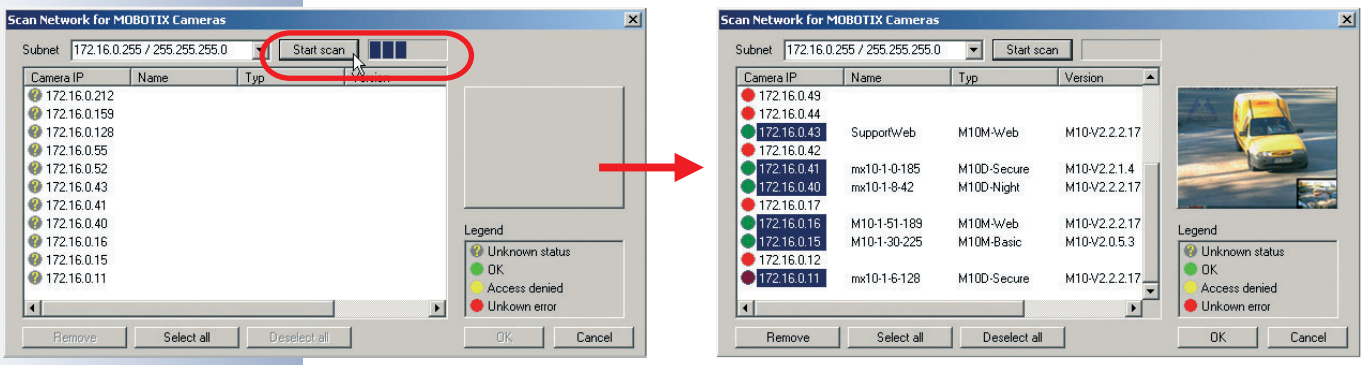
- Click on the **Subnet** dropdown list and select the desired subnet.
- Click on **Scan** to start the camera search.



If MxViewer finds only one subnet, the scanning process will start automatically.

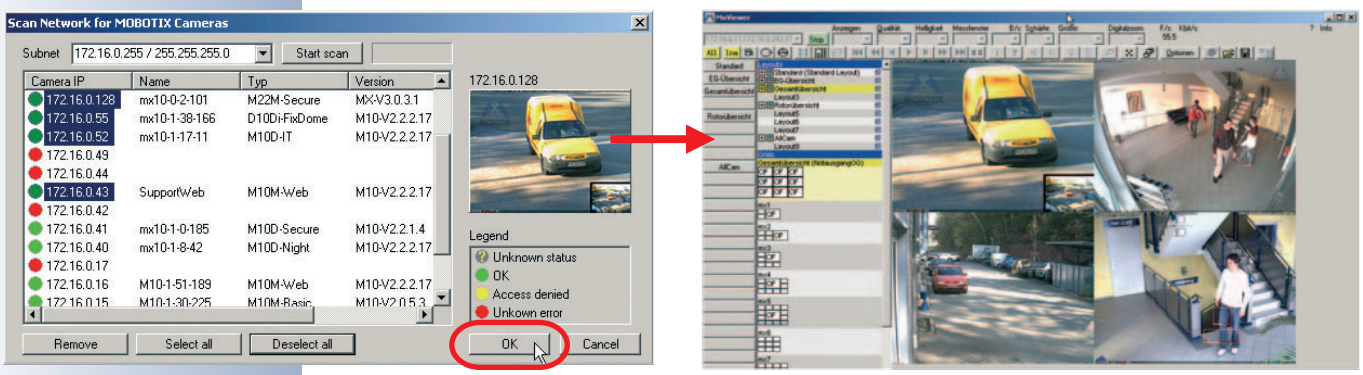
In the first pass, MxViewer searches the selected subnet for MOBOTIX cameras and in the second pass, MxViewer verifies if it can access the cameras.

MxViewer then highlights all cameras in the list, which have a status of *OK* or *Access denied*:



Using the Highlighted Cameras

Click on **OK** to use the *highlighted* cameras and to include them in the default layout generated by MxViewer:



Automatically Searching MOBOTIX Cameras on all Subnets

Enhanced search features

Future versions of MxViewer will be able to search MOBOTIX cameras not only in the current subnet of the computer, but also in all subnets, which can be reached within the same physical network (e.g. not closed off by routers or other mechanisms).

This means that MxViewer can find cameras with factory IP address (e.g. `10.1.0.99` as in our sample), although the computer is in a different subnet (e.g. `172.16.0.0`).

MxViewer can thus find MOBOTIX cameras automatically and without changing the computer configuration providing the camera has been plugged into the same switch as the computer.

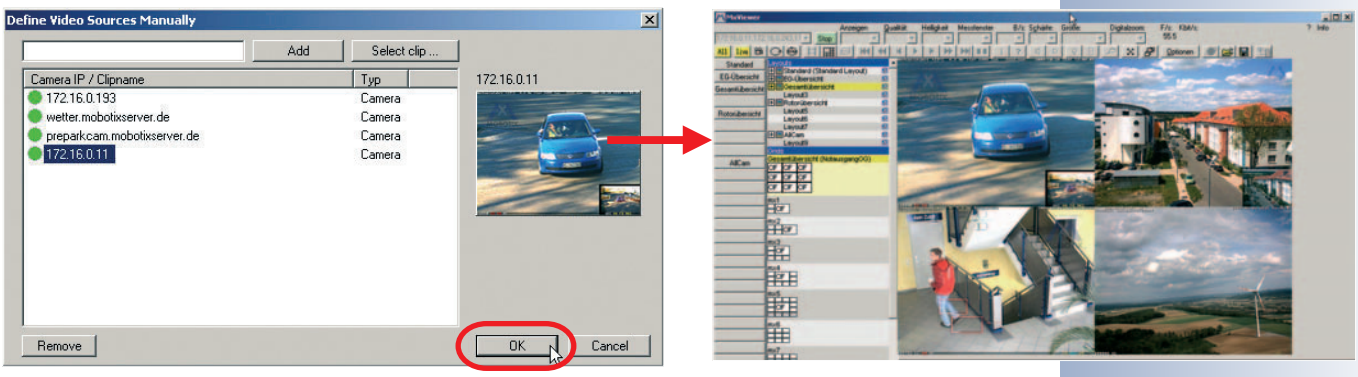
Manually Defining MOBOTIX Cameras

Manually adding cameras and loading recorded video streams

If you have selected the **Define video sources manually** option in the **MxViewer Video Sources** dialog, you can manually add the IP addresses or DNS names of the MOBOTIX cameras.

- **Add**: Add the IP address or DNS name of the MOBOTIX camera you entered to the list.

If possible, MxViewer shows the image of the last camera you added in the preview window. Click on **OK** to use *all* cameras in the list and to include them in the default layout generated by MxViewer:



Displaying MxPEG Video Clips

MxViewer can show multiple MxPEG clips at once!

MxPEG video clips represent the files that contain the video and audio data stored by either MOBOTIX cameras or MxViewer. These clips can be displayed in MxViewer just like the camera images. In order to display one or more MxPEG video clips, activate the **Layout Editor**, right-click the desired camera windows of the layout one by one and select the **Load Clip** command.

To download sample MxPEG video clips, download and install the **MxViewer Demo Pack** from `www.mobotix.com`: **Services > Software Downloads**.

3.5 Starten der Kamera mit automatischer IP-Adresse (DHCP)

If your network has a DHCP server, you can start the camera with DHCP support to automatically obtain a dynamic IP address.

In order to start the camera using DHCP, hold the **magnetic side** of the supplied custom tool onto the spot on the camera casing containing the **L button** (the magnetic switch is mounted inside the camera casing):

Make sure that the loudspeaker is activated!

- Disengage the outer shell using the supplied custom tool (see section 2.10, *Disassembling and Assembling the Camera*).
- If the camera was powered on, disconnect the power supply of the camera by unplugging the corresponding cable.
- Connect the camera's power supply.
- Wait until **LEDs 5 and 0** are lighting up permanently.
- Now hold the magnetic side of the custom tool onto the spot labeled **"L" button** in the figure.
- Only remove the custom tool when the camera plays a sound ("Boing, Boing").

As soon as startup has been completed, the camera automatically announces its IP address, its network mask and its MAC address (if the loudspeaker has not been deactivated).

You can now access the camera using the IP address it just announced.

Announce IP address: **hold magnetic side of custom toolto "L" button**

Note

If you would like to have a running camera repeat its network settings, simply activate the **L button** once using the magnetic side of the custom tool.

In case of an error, the camera uses its last IP address

Caution

When starting the camera with DHCP support, make sure that the DHCP server is running properly. If this is not the case, the camera cannot obtain a valid IP address and will fall back to its last IP address.

3.6 Starting the Camera Using the Factory IP Address

Under certain circumstances, resetting the camera to its factory IP address may become necessary. This could be the case if the IP address of the camera has been lost or the camera does not react to the last known IP address.

Passwords and camera settings will not be changed!

In order to start the camera using its factory IP address, hold the **magnetic side** of the supplied custom tool onto the spot on the camera casing containing the **L button** (the magnetic switch is mounted inside the camera casing):

- Disengage the outer shell using the supplied custom tool (see section 2.8, *Disassembling the Camera*).
- If the camera was powered on, disconnect the power supply of the camera by unplugging the corresponding cable.
- Reconnect the camera's power supply and hold the magnetic side of the custom tool on the spot labeled **"L" button** in the figure.
- Only remove the custom tool when the LEDs are lighting up permanently and the camera plays a sound ("Boing").

The camera is now accessible again using its factory IP address (see label on the camera casing).

Note

When you use the camera's **L button** to load the factory configuration, this configuration is not automatically saved to flash memory. Upon restarting the camera **without** using the camera's L button, the last stored configuration will be used. To permanently store the configuration in the camera's flash memory, open **Admin Menu > Store**.

Make sure you store the configuration to the permanent flash memory

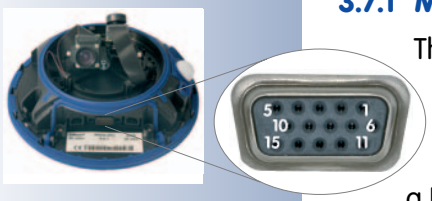
Caution

As opposed to resetting the camera using Admin Menu > Reset configuration to factory defaults, the user names and passwords will *not* be reset when the camera is booted using the factory IP address.

Users and passwords will not be changed

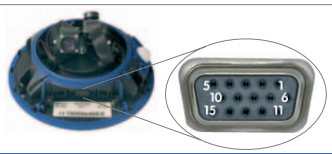
3.7 Connecting External Devices and Sensors: MX Interface Connector and MOBOTIX Cam-IO

3.7.1 MX Interface Connector for Direct Connections



The MOBOTIX camera has **one signal input and one signal output for switching loads** as well as **two signal inputs and two signal outputs of the RS232 interface** on the MX Interface Connector (D Sub 15 HD). You can use the camera's signal input/output pins to detect an opening door (using a Reed switch) or to switch an external device (e.g. a lamp).

The interface connector also has Line In/Out pins for external audio devices. You can use the Line In pin to have the camera transmit and record external audio signals (e.g. from an external microphone with pre-amplifier). On the other hand, the camera can use the Line Out pin to transmit sound to external devices (e.g. an audio amplifier). This in turn opens new possibilities as the camera can feed external loudspeakers (such as announcement systems on a train station) or it can use external and more sensitive microphones that can be placed farther away from the

	Pin-out of MX Interface Connector D Sub 15 HD				
	Pin	**Signal**	**Alternative**	**Description**	**Remarks**
	5	GND		**Ground** for RS232, USB, Backup V-In	
Audio	4	Line-In +		**Audio input**, Line signal level U_{RMS}=1V	Galvanically isolated by transformer (DC decoupled)
	6	Line-In -			
	10	Line-Out +		**Audio output**, Line signal level U_{RMS}=1V	Galvanically isolated by transformer (DC decoupled)
	14	Line-Out -			
In/Out	9	In 1		**Signal input**, active < 0,5V, inactive > +3V,max. voltage=24V	
	1	Out 1		**Signal output**, OpenCollector, active vs. GND, max. 24V/ 50mA, inactive 10kOhms vs. 3.3V	
USB	13	USB +5V		**Power supply** for USB devices 5V/100mA vs. GND	With backup power (12V) or PoE, 500mA also possible
	11	USB D+		**USB master data signals**, 0V to 3.3V	
	12	USB D-			
Serial interface	2	RxD	RxD RS232	**active** = -3V to -12V, inactive = +3V to +12V	
			RxD I/O	**Signal input**, inactive: open or voltage > 3V, **active**: GND or voltage < 0V, max. ±12V	
	3	TxD	TxD RS232	**active** = -3V to -12V, inactive = +3V to +12V	
			TxD I/O	**Signal output**, inactive: < 3V max. 3mA, **active**: > +3V max. 3mA, max. voltage ±12V	While the system boots, the signal state is undefined
	7	RTS	RTS RS232	**active** = +3V to +12V, inactive = -3V to -12V	
			RTS I/O	**Signal output**, inactive: < 3V max. 3mA, **active**: > +3V max. 3mA, max. voltage ±12V	While the system boots, the signal state is undefined
	8	CTS	CTS RS232	**active** = +3V to +12V, inactive = -3V to -12V	
			CTS I/O	**Signal input**, inactive: open or voltage > 3V, **active**: GND or voltage < 0V, max. ±12V	
	15	Backup V-In		**Backup power** 6V to 12V vs. GND, max. 1A	

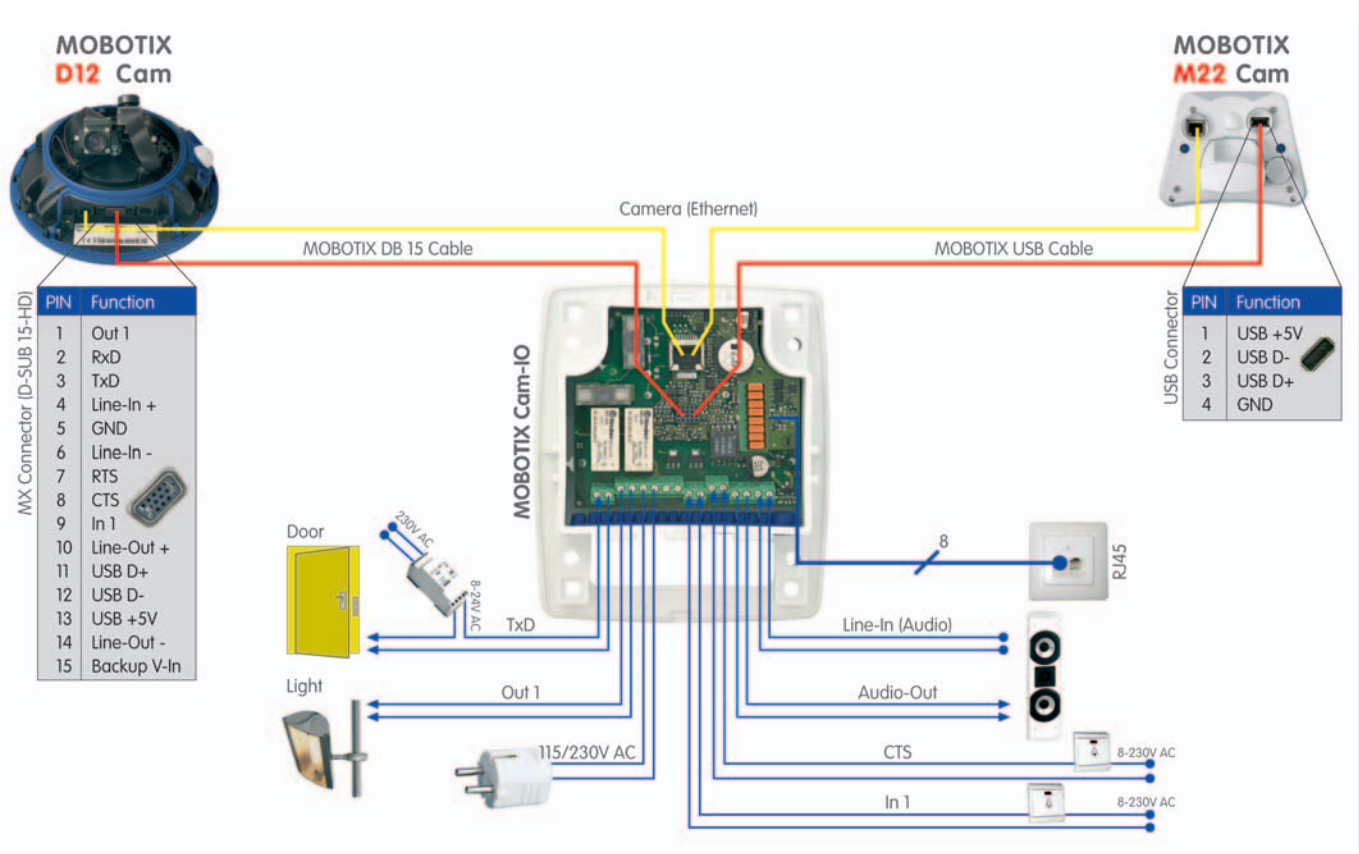
camera (e.g. when using a MOBOTIX camera as a video conferencing system and in access control scenarios).

3.7.2 MOBOTIX Cam-IO: Expansion Module for Easy Installation

This expansion module has the following main tasks:

- It represents a unified installation platform with power supply for the MOBOTIX D12, M12 and M22 models with SecureFlex mount.
- It is a unified interface for attaching external sensors (using the signal inputs) and to control external devices using the camera's signal outputs.
- It hooks up directly to utility power and thus can power lamps with up to 500 W (230 V) or 250 W (115 V) or other devices with a power consumption of max. 4 A.
- It can control one more external device using an external relay.
- It allows connecting external amplifiers and microphones (using a pre-amplifier) in order to implement announcement systems or door communication/ intercom systems, for example.

The MOBOTIX Cam-IO will be available from Q1 2007.



3.8 Signal Input/Output, RS232 Interface

The signal lines of the serial interface can also be programmed as additional signal inputs. **Setup Menu > Event Settings > Second/Third/Fourth Signal Input > Signal Input 1/2/3**. This means that you can use three additional signal input lines

The MOBOTIX camera provides a signal input/output as well as two additional signal input pins and two signal output pins on its RS232 interface (not available on WEB and BASIC models). You can use the camera's signal input/output to detect an opening door (using a Reed switch) or to switch an external device (e.g. a lamp using a relay). The signal input/output pins of the RS232 interface can be used for attaching additional sensors and devices.

3.8.1 Signal Input Pins

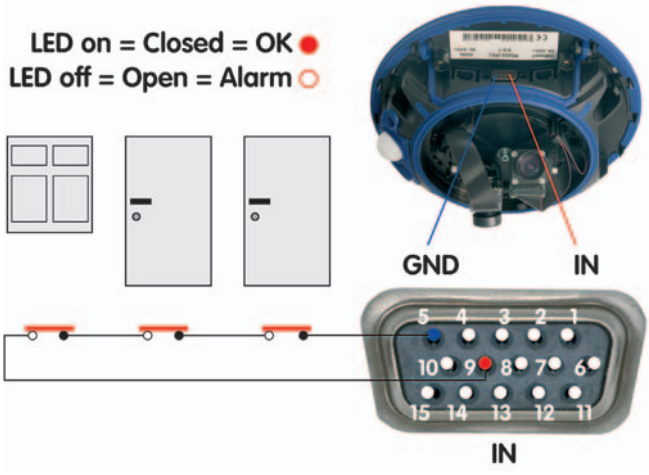
Polarity can be switched

Pin 9 of the D Sub 15 HD connector is used for detecting the signal input. To trigger the signal input, simply connect pin 5 (ground) to pin 9 (no current required). You can also connect other devices (e.g. SPS machines) that close a contact (0V) to trigger the signal input.

Bridge < 2 kOhms

Click on **Setup Menu > Event Settings** to specify which state of the signal input should create an event—an open loop or a closed loop. For example, if you would like to secure all windows and doors of a building, connect all closed switches in a serial loop and connect the wires to signal input (pin 9) and ground (pin 5). The loop should have a resistance of less than 2 kOhms. This pin of the camera is already equipped with a low pass filter (10 kOhms/10 nF).

Integrated low-pass filter: 10 kOhms, 10 nF



Open **Setup Menu > Event Settings** to activate the additional signal input pins of the RS232 interface (*Closed/Low* or *Open/High* option; CTS: pins 8-5, RxD: pins 2-5). Open **Admin Menu > Setup of serial interface and modem** and configure the serial interface accordingly (**Serial**: *Data*, **Mode**: *I/O Mode*).

Click on **Admin Menu > LED Setup** and set one or more LEDs to *Signal input* to display the state of the input signal for testing (*Signal input* option: loop closed = LED on).

"**0**": Current higher than +3 V ==> inactive ==> LED off

"**1**": Current lower than 0.5 V ==> active ==> LED on

3.8.2 Signal Output Pins

When an event is detected, the MOBOTIX camera can switch the signal output (pin 1). Use the corresponding options in **Setup Menu > Actions** to set how long the camera should close the signal output.

- **Off**: Signal output is open (10 kOhms on 3.3 V)
- **1s, 2s, 5s, 10s, 30s, 1min, 5min**: Closes the contact between pin 1 of the D Sub 15 connector and ground (pin 5). The signal output is protected against power surges and unwanted feedback (±48 V) and switches up to 50 mA. It can thus switch a 12 V relay with 0.6 W and a 24 V relay with 1.2 W.

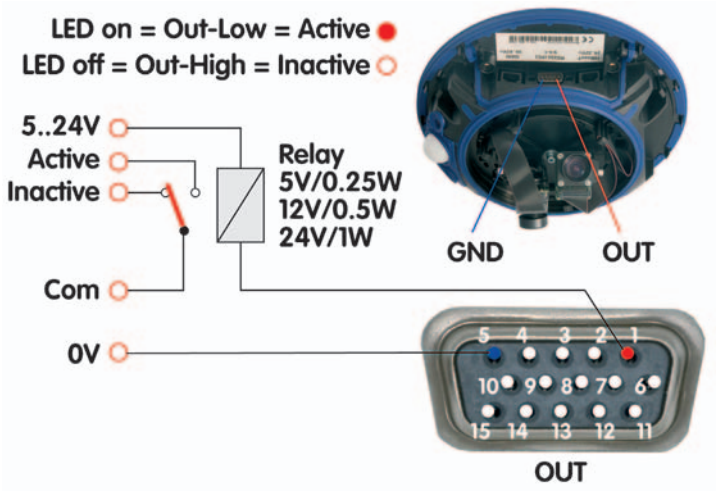
Open **Setup Menu > Enhanced Signal Out Options** to set custom switching times for any combination of events (not WEB and BASIC models). This dialog also allows using a time table and setting a dead time.

Click on **Admin Menu > LED Setup** and set one or more LEDs to *Signal input* to display the state of the input signal for testing (*Signal input* option: loop closed = LED on).

Activate the signal output in **Admin Menu > LED Setup** or for specific events in **Setup Menu > Event Settings**

The event settings allow activating the signal output for a certain time only (to generate an impulse)

Example setup



Select the trigger condition:

- Open (high)
- Closed (low)
- Rising (low to high)
- Falling (high to low)
- Change: (rising or falling)

Besides detecting the current state (open or closed), you may also trigger upon rising, falling or changing signal flanks.

Note

In contrast to the signal output pins of the RS232 interface (pins **3** and **7**), the signal output pin **1** assumes an inactive state and will stay inactive while the camera is booting.

The *Pin-out of MX Interface Connector D Sub 15 HD* table in section 3.7.1, *MX Interface Connector for Direct Connections*, contains a detailed explanation of the individual pins.

3.9 Drilling Templates D12

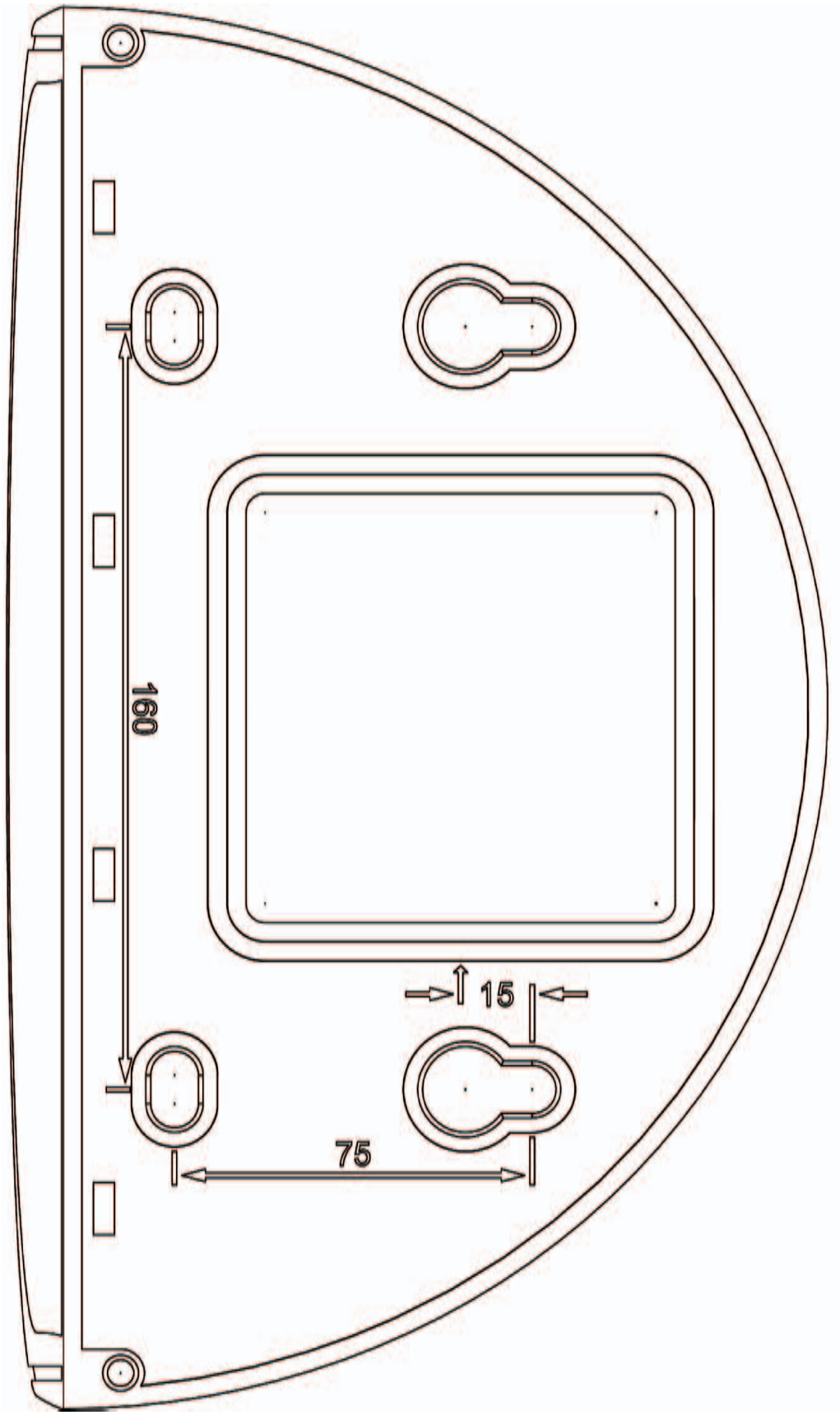
Find the drilling templates (scale 1:1) at the end of the manual as a fold-out

D12 footprint

Note

Make sure that the drilling templates are not scaled nor adjusted to the paper size when printing.

When printing the PDF file, you should print two pages onto one to obtain an unscaled printout of the drilling templates.



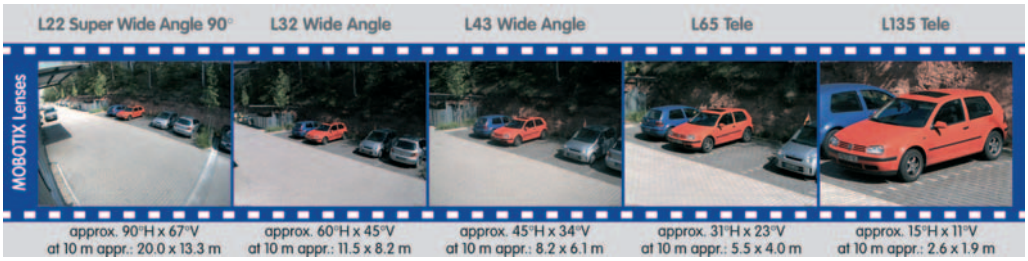
D12 wall mount and weather protection

D12 Camera Manual Part 1

	D12D-IT MX-D12D-IT-D22D22	D12D-IT-DNight MX-D12D-IT-DNight-D22N22	D12M-Sec MX-D12D-Sec-D22	D12D-Sec MX-D12D-Sec-D22D22	D12D-Sec-DNight MX-D12D-Sec-DNight-D22N22	D12D-Sec-Night MX-D12D-Sec-Night-N22N22
D12 Hardware Features						
Outdoor weatherproof*	IP65*	IP65*	IP65*	IP65*	IP65*	IP65*
Mono (M) /Dual (D)	D	D-night	M	D	D-night	D
Image sensor	Color	Color/B&W	Color	Color	Color/B&W	B&W
Image size	**VGA**	**VGA**	**Mega**	**Mega**	**Mega**	**Mega**
Resolution horizontal x vertikal	640x480	640x480	1280x960	1280x960	1280x960	1280x960
Max. frame rate CIF/VGA/Mega	25/12/-	25/12/-	25/12/4	25/12/4	25/12/4	25/12/4
Sensitivity at 1/60 second (lux)	1	0.1	1	1	0.1	0.1
Sensitivity at 1 second (lux)	0.05	0.005	0.05	0.05	0.005	0.005
Automatic night lens switch	-	X	-	-	X	-
Standard lens	L22/L22	L22/L22	L22	L22/L22	L22/L22	L22/L22
Storage (MB)	**64**	**64**	**128**	**128**	**128**	**128**
Video ring buffer (MB)	32	32	64	64	64	64
CIF images approx.	2,000	2,000	4,000	4,000	4,000	4,000
VGA images approx.	1,250	1,250	2,500	2,500	2,500	2,500
Mega images approx.	-	-	800	800	800	800
Ethernet, ISDN, USB, RS232	E /I / - /R	E /I / - /R	E /I / - /R	E /I / - /R	E /I / - /R	E /I / - /R
CF slots (MOBOTIX extensions)	-	-	-	-	-	-
Microphone/Speaker	M/S	M/S	M/S	M/S	M/S	M/S
External audio (Line-In/Out)	-	-	-	-	-	-
Signal input	1	1	1	1	1	1
Signal output	1	1	1	1	1	1
Concealed cabling	X	X	X	X	X	X
In stock	yes	yes	yes	yes	yes	yes
Outdoor Wall Mount (accessory)	X	X	X	X	X	X

* Only D12 with Outdoor Wall Mount has protection class IP65

D12 with Outdoor Wall Mount IP65


L22 Super Wide Angle 90°
L32 Wide Angle
L43 Wide Angle
L65 Tele
L135 Tele
MOBOTIX Lenses
approx. 90°H x 67°V at 10 m appr.: 20.0 x 13.3 m
approx. 60°H x 45°V at 10 m appr.: 11.5 x 8.2 m
approx. 45°H x 34°V at 10 m appr.: 8.2 x 6.1 m
approx. 31°H x 23°V at 10 m appr.: 5.5 x 4.0 m
approx. 15°H x 11°V at 10 m appr.: 2.6 x 1.9 m

	Basic Models	Web Models	IT Models	Secure Models
Software Features (All Models)				
Digital zoom (2x, 4x) with panning		X		X
Motion JPEG/MxPEG video streaming	X/X	X/X	X/X	X/X
Custom exposure windows	X	X	X	X
Video Motion detection	X	X	X	X
Time and event control (FTP, email, logos)	X	X	X	X
Time tables with holidays	X	X	X	X
Web functionality (FTP, email)	X	X	X	X
Quad/MultiView in browser	X	X	X	X
Recording/Playback in browser	X	X	X	X
Logo generator, animations		X	X	X
Single image recording (pre-/post-alarm images)	3	3	10	50
Terabyte ring buffer (Win/Lin/Mac) via network			X	X
Continuous video/audio recording, 0.2 to 30 fps			X	X
Video/audio recording (event-triggered)			X	X
Event-controlled frame rate with continuous audio			X	X
Flexible event logic				X
Master/Slave arming by one camera				X
Scheduled privacy zones, several areas				X
Bidirectional audio (IP) from/to browser			X	X
Customized voice messages			X	X
VoIP telephony (Audio/Video, SIP)			X	X
Alarm calls to softphones (SIP) e.g. Xten			X	X
Remote alarm notification (via TCP/IP, IP Notify)			X	X
RS232 Data Logger/Terminal			X	X
Programming interface/HTTP API			X	X
Model Limitations				
Image size	VGA	Mega	VGA	Mega
Image sensor (color / BW)	Color	Color	Color & BW	Color & BW
Standard lens for software version	L43	L43	L43	L43
Audio support (Microphone/Speaker)	-/S	-/S	M/S	M/S

IP65 CERTIFICATE

VDE Prüf- und Zertifizierungsinstitut

VDE VERBAND DER ELEKTROTECHNIK
ELEKTRONIK INFORMATIONSTECHNIK e.V.

KONFORMITÄTSBESTÄTIGUNG
STATEMENT OF COMPLIANCE

Für das (die) überprüfte(n) Produkt(e)
for the approved product(s)

Erzeugnis *Product*	**FixDome outdoor Secure-Kamera mit Dual-Optik** ***FixDome outdoor secure-camera with Dual-Optik***
Typenbezeichnung *Model/Type ref.*	**D10**
Weitere Information(en) Further information	**IP65**
Warenzeichen *Trade mark*	MOBOTIX
Auftraggeber / Hersteller Client / Manufacturer	**MOBOTIX AG** **Luxemburger Strasse 6** **67657 Kaiserslautern**
Angewandte Normen Applied standards	**Abschnitte / Clauses: 12; 13; 14** **DIN EN 60529/VDE 0470 Teil 1:2000-09** **EN 60529:1991 + A1:2000**
Prüfbericht-Nr. *Test report reference no*	**2514700-9010-0001/65621 FG33/bhl** **2005-11-25**

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Leiter Fachbereich F3
Head of Deparment F3

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Declaration of Conformity

Konformitätserklärung gemäß dem Gesetz über Funkanlagen und Telekommunikationsendeinrichtungen (FTEG) und der Richtlinie 1999/5/EG (R&TTE)

Declaration of Conformity in accordance with the Radio and Telecommunications Terminal Equipment Act (FTEG) and Directive 1999/5/EC (R&TTE Directive)

Déclaration de conformité selon la loi sur les équipements hertziens et les équipements terminaux de télécommunication (FTEG) et la directive 1995/5/EC (R&TTE)

Hersteller/verantwortliche Person: Manufacturer/responsible person: Fabricant/personne responsable :	MOBOTIX AG
erklärt, dass das Produkt: declares that the product: déclare que le produit :	Netzwerk-Kamera Network camera Caméra de réseau
Typ: Type: Type :	D12
Telekommunikations(Tk-)endeinrichtung Telecommunications terminal equipment Equipement de terminal de télécommunication	Netzwerk-Kamera zum Anschluss an das EURO-ISDN Network camera for connection to the EURO ISDN Caméra de réseau pour connecter au RNIS EURO
Verwendungszweck: Intended purpose: Le but suivi :	Übertragung von Bildern und Toninformationen Transmission of images and audio information Transmission d'images et du son

bei bestimmungsgemäßer Verwendung den grundlegenden Anforderungen des § 3 und den übrigen einschlägigen Bestimmungen des FTEG (Artikel 3 der R&TTE) entspricht.
complies with the essential requirements of §3 and the other relevant provisions of the FTEG (article 3 of the R&TTE Directive), when used for its intended purpose.
est conforme aux exigences fondamentales du paragraphe 3 du FTEG (article 3 du R&TTE) et des autres clauses s'y rapportant.

Gesundheit und Sicherheit gemäß § 3 (1) 1. (Artikel 3 (1) a))
Health and safety requirements pursuant to § 3 (1) 1. (article 3 (1) a))
Santé et sécurité conformes au paragraphe 3 (1) 1. (article 3 (1) a))

angewendete harmonisierte Normen: EN 60950:2000 (NSR 73/23/EWG & 93/68/EWG)
harmonised standards applied: (LVD 73/23/EWG & 93/68/EC)
normes harmonisées : (Directive Basse Tension 73/23/EWG & 93/68/EC)

Schutzanforderungen in Bezug auf die elektromagn. Verträglichkeit § 3 (1) 2, Artikel 3 (1) b))
Protection requirements concerning electromagnetic compatibility § 3 (1) 2, (article 3 (1) b))
Exigences de protection concernant la compa tibilité électromagnétique, paragraphe 3 (1) 2; (article 3 (1) b))

angewendete harmonisierte Normen: harmonised standards applied: normes harmonisées :	EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6 EN 61000-4-11	EN 55022, Class B EN 55024 EN 61000-6-2 EN 61000-6-3	(EMV-RL 1995/5/EG (R&TTE)) (EMCD 1995/5/EG (R&TTE)) (Directive EMC 1995/5/EG (R&TTE))

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Addresse : 67657 Kaiserslautern
Germany

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E-Mail: info@mobotix.com

Kaiserslautern, 01.09.2006

Ort, Datum
Place & date of issue
Lieu et date

Dr. Ralf Hinkel
Vorstand/CEO, MOBOTIX AG

Name und Unterschrift
Name and signature
Nom et signature

Notes:

MOBOTIX ... the new face of IP video

All pictures in this user manual are genuine MOBOTIX camera images.
Enjoy the image quality!

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http://www.mobotix.com
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Registration Number: HRB 3724

Tax Code: 19/650/0812/1
Tax Office: Kaiserslautern, Germany

VAT ID:
DE 202203501

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CE

Technical information subject to change without notice!

Megapixel
1280 x 960
software zoom

30 Frames/s
VGA (640 x 480)
10 fps Mega

-22°F to +140°F
Weatherproof
-30°C to +60°C, IP65
no heating necessary

IEEE 802.3af
PoE
network power
even in winter

microphone & speaker
Audio
bi-directional via IP
variable framerates

Video SIP Client
IP-Telephony
alarm notify,
cam remote control

Video motion
multiple windows
precision pixel-based

lip-syncronized audio
Recording
event-ringbuffer
30 cams each 30 fps

Live viewing
30 cams at 30 fps
all on one screen

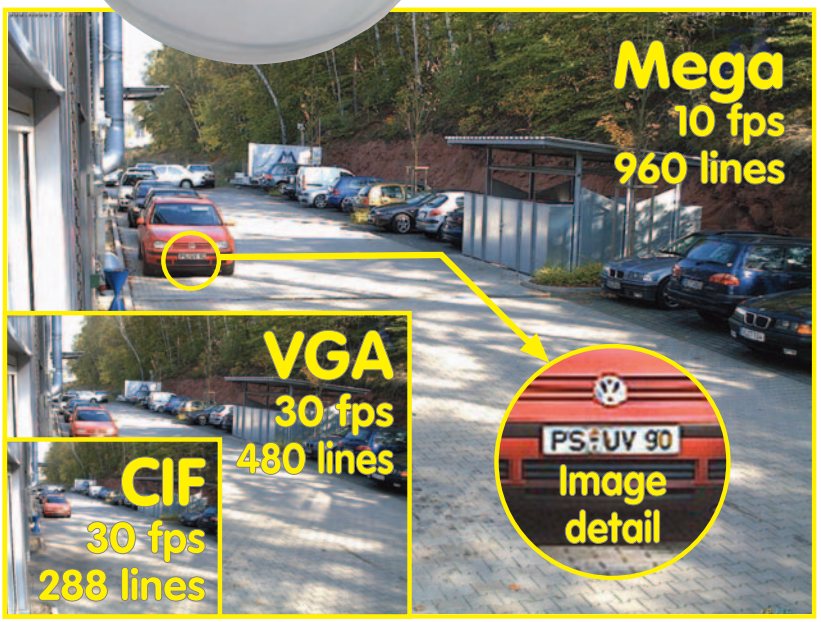
Backlight
safe using CMOS
without mechanical iris

Wall bracket
with cable cover
for RJ45 wall outlet

Robust
no moving parts
fiber glass housing

MX-CM-D12-EN-01

D12
Camera Manual
Part 1



Complete integration for web and security

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Security-Vision-Systems
MOBOTIX

MOBOTIX ... the new face of IP video